PRESENTATION BY THE SOCIETY FOR CANADIANS STUDYING MEDICINE ABROAD (SOCASMA)

SELECT STANDING COMMITTEE ON HEALTH

July 12, 2016

Presented by:
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Presentation to the Select Standing Committee on Health on July 12, 2016

Subject:

How can we improve health and health care services in rural British Columbia? What long-term solutions can address the challenges of recruitment and retention of health care professionals in rural British Columbia?

Presentation by The Society for Canadians Studying Medicine Abroad (SOCASMA). Presenters on behalf of SOCASMA are Praveen Vohora and Rosemary Pawliuk.

Introduction

Our non profit society was incorporated under the Society Act of British Columbia on August 17, 2010.

The primary goal of our society is to support Canadians Studying Abroad (CSAs) in their struggle to access post graduate medical training in Canada. We are concerned that there is negative stereo typing and prejudice with undue barriers being placed that hinder and prevent CSAs from accessing post graduate medical training in BC and other Provinces in Canada.

Praveen is a Fellow of the Chartered Professional Accountants of BC (and Fellow Chartered Accountant). Praveen obtained his chartered accounting designation in England and moved to Canada in 1974 and after admission to the BC Institute has worked and practiced in his own firm for the last 40 years. The first 30 years being exclusively in Prince Rupert, BC and since then has maintained an office there and now is primarily based here in South Surrey and Vancouver. Praveen's son obtained his BSc at UNBC in Prince George, BC and then went to the Caribbean Islands to study medicine. He has completed all the US MLE steps 1 to 3; all the Canadian examinations and is eligible to start his residency in Canada.

Rosemary is a lawyer and the President of our Association. Her daughter completed her medical studies in Ireland and during that time realized how biased the system was in Canada and she has elected to remain there and practice medicine abroad.

Praveen has many clients who practiced medicine in the North, including specialists originating from South Africa. Praveen has also conducted audits of hospitals prior to the establishment of Health Authorities. These Hospitals were based in Queen Charlotte (Haida Gwaii), Bella Coola, Bella Bella, and Hazelton. The physicians in three of these locations are recruited by the United Church.

Physician Shortages

There is a dire shortage of physicians in our Province (Appendix A). Experience has shown us that when there is a shortage the Physicians will relocate to the lower mainland as they believe that rural communities add to the stress of practicing medicine as there are no specialists and the doctor ends up dealing with all kinds of emergencies.

People that have grown up in smaller communities have a stronger commitment to smaller centres and it is more likely that they will stay and practice in the community they have grown up in. Of the ten odd South African Doctors that emigrated to Prince Rupert only 4 remain in practice in Prince Rupert. The ones that remain have built social networks; have previously lived in rural communities in South Africa, and their families have settled in well. The ones that left were either attracted to the larger urban centres;

some could not obtain certification in their field; or their children were unable to access universities or colleges and would have had to live separately from their parents.

As a comparison, my accounting practice initially hired students from the lower mainland and found that the minute accounting positions were available in the lower mainland they moved back. We had a constant struggle in maintaining or finding good staff. It was only when UNBC was established in the North that we started promoting accounting as a profession to the students in the community (It did not matter which University they elected to receive their education from). Our firm provided scholarships to two students from each of two high schools. We held forums at UNBC for the graduating class to attract them into joining our firm.

We found that as a general rule two out of three students remained with the firm and looked for success within the firm and only if they did not receive promotion or their interest changed to Industry or Government service, that they moved from the firm. Our firm has five Partners and of the five four are from Prince Rupert.

Recommendations

This experience has helped me understand that to attract physicians to the rural communities the following has to take place:

1. Involve the Communities to identify and promote students within their community to start a career in medicine. There should be programs available for these students to access assistance financially and career advice so they can pursue their chosen field of study.

2. Conversion to Health Authorities took away the Hospital Boards that were locally manned and now there is a large health authority and it would be impractical to have community representation from each community within the Health Authority. Perhaps the solution for this is to set up advisory boards within the communities and they can send their recommendations to the Health Authority and as part of their mandate they would have a say in the recruitment of medical staff.

3. Increase the number of residency positions as no one can predict how many physicians are needed in each year. The tendency is to look at current supply needs and set the positions based on this. This does not take into account the natural population growth, aging population or attrition from sickness or death in the number of physicians providing the service. The fear has been that with over supply incomes may go down; or place a pressure on the funds needed from the Health budgets for physician salaries. The truth is that if capital forces are allowed to rule none of these fears will be a reality. Every other profession has managed to maintain their income and they do not try and limit the numbers practicing but capital forces have made sure that supply is equal to the demand. Dental services is a prime example of the service being available to almost all and the insurance premiums have not grown any higher than what a person has to pay to Medical Services Plan.

4. The study that we attach (Appendix B) indicates that there would be a higher success rate if CSA's were allowed to practice in the rural areas as they have a better understanding of the fabric of life in Canada while IMG'S are older and have a tendency to practice where more members of their ethnic background live.

5. It appears that success in obtaining admission for students in rural communities to medical schools is hampered by the fact their resume is not as Ivy League as a student from the larger centres. They are attending schools overseas not because of their poor grades and allowing an equal footing when the residency positions are considered will make a huge difference in attracting these students back to the communities they grew up in. In every profession once the graduate has shown by writing Canadian examinations that they are capable of practicing in Canada allows them access to the profession that they have been trained for. Even after demonstrating this by writing the Canadian entrance examination the medical profession places a further hurdle that they will select the CMG'S first and limit the positions available to CSA'S and IMG'S. This is not only discriminatory and against the Charter but also not in the best interest of the public. Our professional bodies have a mandate that they protect the public interest foremost over interest of their members. This discriminatory practice must stop and it will in fact provide the poor serviced areas of our Province to retain physicians and that would be in the best interest of the Public.

Conclusion

Rural Communities if allowed participation will be the best contributors towards attracting students from their community to become Doctors. Our recommendations will serve public interest and provide much better access to medical care in rural communities.

http://vancouversun.com/news/local-news/wanted-doctors-to-fill-667-vacancies-in-b-c

Wanted: Doctors to fill 667 vacancies in B.C.


Pamela Fayerman
More from Pamela Fayerman

Brian Morton
More from Brian Morton
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Susan Stewart, 41, is a West End resident who has no family doctor and uses the Care Point Medical Centre walk-in clinic on Davie St. Mark Yuen / PNG

The number of vacancies for physicians in B.C. is believed to have reached a historical high, with nearly 700 positions listed by Health Match B.C., the provincial agency that recruits health professionals from around the world.

And if last year's recruitment is any indication, only about a third of the doctors will be found. Last year, it filled 234 vacancies — 192 on a permanent basis and 42 locum (temporary) positions. Of the 667 postings listed now (the number fluctuates on a daily basis), 447 are in family medicine.

Data provided by the Ministry of Health shows constantly escalating vacancies for the past four years, particularly for general practitioners.

This comes as no surprise to West End resident Susan Stewart, who has been using walk-in clinics for the past six years since her doctor retired.

"Every time I ask for a referral, I'm referred to the websites," said Stewart, 41, who is forced to wait in line to see a doctor each time at her local Care Point Medical Centre on Davie. "And after doing some research on the doctors I find there, I call the offices to ask about availability and I'm told that some of the doctors on the list aren't taking patients."

At the clinics, Stewart added, she sees a host of different doctors but doesn't "get that familiarity that you get from a regular family doctor. For some things it's a concern because you like to have a doctor-patient relationship with someone who knows your history instead of having to repeat it every single time to a new doctor."

John Mabbott, executive director of Health Match B.C., acknowledges the list of vacancies is significant. According to the latest (2015) report from the Canadian Institute for Health Information, there were a total of 10,692 doctors in B.C. in 2014. The College of Physicians and Surgeons of B.C. says there were 11,574 doctors in B.C. as of February 2015.

Both Mabbott and Sarah Plank, communications director for the ministry of health, attributed the vacancies in community clinics and hospitals to an aging population that is creating more demand for medical services as well as the fact that younger doctors are working fewer hours as they seek more work-life balance than generations of doctors before them.

"Younger doctors are not working 70-hour work weeks," Mabbott said, adding that female doctors — a growing proportion of the medical profession — also tend to take more time off because of family commitments. Such furloughs create more need for locums.

Plank said that in the first quarter of 2016, Health Match filled 80 physician vacancies (60 permanent and 20 locum positions). Eighty is the highest number of jobs filled in a quarter in four years, she noted.

Dr. Alan Ruddiman, president of Doctors of B.C., said B.C. is now facing "the perfect storm" with an aging medical workforce (average age 54) and an aging population needing doctors more than ever.


Dr. Alan Ruddiman, president of Doctors of B.C. Lionel Trudel / Vancouver Sun

"When I first came to Oliver to practice family medicine 20 years ago, I took over a practice in which the average patient was 63 years old. Now it is 76," he said. "Patients living longer have more complex conditions and this is putting more demands on doctors."

He said doctors have been pressuring health authorities for years to come up with physician supply plans. “Otherwise, it’s a crapshoot trying to predict where we need doctors and how many.”

The health ministry is finally preparing such a plan, he noted.

Foreign-trained medical graduates, including the 100 or so B.C. residents who each year graduate from medical schools outside Canada, could help fill vacancies. According to the College of Physicians and Surgeons of B.C., about 200 foreign (international medical graduates) doctors are deemed eligible for registration and licensure if they meet certain criteria. But that doesn’t mean they will all get jobs.

Ruddiman said one of his goals as president is to “chip away” at how to increase the numbers of jobs for Canadian medical graduates who train overseas and want to come back here to work.

“It’s like turning a big tanker around,” he said, referring to the fact that Canadians have to compete against non-Canadians who also trained overseas and there are only so many postgraduate residency spots. They are also required to prove their education was similar and at least equal to the education they would have gained in Canada.

For many British Columbians, the first step in the hunt for a family doctor is the College of Physicians and Surgeons’ Find a Physician online search tool.

A few quick queries reveal that rural residents aren’t the only ones having trouble finding GPs. In Kamloops, the province’s eighth-largest city, not one of its 118 practising family doctors is accepting new patients. The situation is the same in Victoria, Abbotsford, Nanaimo and Kelowna.

For those desperate for a family doctor, it means possibly long waits at walk-in clinics. Stewart says her wait time “can be anywhere from one to three hours depending on the time of day.”

Ameez Allidina, who also visited the Care Point clinic Wednesday, said he hasn’t bothered looking for a family doctor because people he works with have told him it’s virtually impossible.

“The last time I had a doctor was seven or eight years ago (after a move from Ladner). It’s disheartening,” said the 37-year-old. “The lineups (at the clinic) are pretty long in general.”

Mary Powell, a 66-year-old West End resident, said she times her visit to the walk-in clinic so she can continue to see the same doctor. She said she phones ahead and asks the receptionist when her doctor is in, and heads down to the clinic to see him.

“You pick a window when he’s there. I’ve done this for three weeks and it’s worked out well,” she said.

Powell said her waits can be between one to three hours.

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Demographics, Debt, and Practice Intentions of Medical Residents Training in Canada

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Plusieurs médecins ayant obtenu leur diplôme à l'étranger (DE) sont incapables de faire leur résidence au Canada ; une proportion de plus en plus grande d'entre eux sont des Canadiens qui, après avoir obtenu leur diplôme à l'étranger, souhaitent revenir pratiquer au pays (CDE). Dans cet article, nous analysons les caractéristiques de ces diplômés et leurs intentions en ce qui concerne leur pratique. Nous examinons le cas des DE en excluant les CDE, le cas des CDE, et le cas des résidents qui ont obtenu leur diplôme au Canada (CDC). Nos résultats suggèrent que les cas des CDE et des CDC sont similaires, mais que celui des DE diffère sur des points importants. Quand on neutralise les caractéristiques, on observe que la probabilité que les DE affirment qu'ils ont l'intention de pratiquer là où ils ont fait leur résidence au Canada est plus faible. Cela confirme les conclusions de recherches antérieures qui avaient démontré que les régions où l'on compte sur des DE pour avoir suffisamment de médecins pourraient avoir des problèmes à ce niveau.

Mots clés : ressources humaines dans le domaine de la santé, intentions des diplômés en médecine en ce qui concerne leur pratique, médecins ayant obtenu leur diplôme à l'étranger, médecins nés à l'étranger, reconnaissance des diplômes obtenus à l'étranger

Many international medical graduates (IMGs) are unable to find residency positions in Canada. A growing proportion are "Canadians studying abroad" (CSAs) trying to return to Canada. We examine the characteristics and practice intentions of residents in Canada: IMGs excluding CSAs, CSAs, and Canadian medical school graduates (CMGs). CSAs and CMGs appear to be similar, but IMGs do not in key instances. IMGs are substantially less likely to state that they intend to practise where they trained or in Canada, controlling for characteristics. This adds support to previous findings indicating that regions relying on IMGs to provide health care may experience ongoing challenges.

Keywords: health human hesources, physician's practice intentions, foreign-trained physicians, foreign-born physicians, foreign credential recognition

Introduction

The recognition of foreign professionals' credentials is an issue in Canada. In 2009, the Minister of Immigration stated that foreign-trained physicians were cleaning hotel rooms while Canadians went without physicians as medical associations tried to maintain their control over labour markets (Delacourt 2009). The Canadian Medical Association (CMA) claimed it recognized the need to provide internationally trained physicians, classified by the Medical Council of Canada (MCC) as international medical graduates (IMGs), a "reasonable opportunity to attain their postgraduate credentials and become licensed to practise in Canada," highlighting that this would "permit Canadians who study medicine abroad (CSAs) to pursue their medical careers in Canada" (CMA 2009, 3).[1] IMGs have consistently made up about 25 percent of practising physicians in Canada (Crutcher et al. 2003; MCC 2014; Walsh et al. 2011). The CMA proposed "greater self-sufficiency in the education and training of physicians" (CMA 2012, 6).

The debate continues. On the one hand, the increased integration of IMGs has alleviated physician shortages (CPSO 2013); on the other, there are claims that only half of IMGs are practising medicine (Lofters et al. 2014). In order to practise medicine in Canada, all medical graduates are required to pass the MCC Qualifying Examination (MCCQE), Parts I and II. To be eligible to write MCCQE, Part 1, most IMGs must pass the MCC Evaluating Examination. Most provinces also require IMGs to pass the National Assessment Collaboration (NAC) examination to be eligible for post-graduate residency training (MCC 2014, 2015).[2] Residency positions are also often associated with Return of Service Agreements (ROS) to practise in provincially

designated, often medically underserved, communities for some period of time after their residency is completed (CaRMS 2012; McDonald and Worswick 2010).

Since 2003, provincial governments have been increasing the number of IMG-dedicated residency positions (Watts, Davies, and Metcalfe 2011). However, only about 10 percent of Canadian residency spots are available to IMGs, while the number (including CSAs) applying for residency positions has increased consistently over time (Barer, Evans, and Hedden 2014a). In the 2012 match cycle, IMGs represented about 44 percent of the total applicant pool, but only 19 percent of IMGs were matched with residency positions (CaRMS 2012), down from 25 percent in 2010 (Watts, Davies, and Metcalfe 2011). CSAs are "increasingly displacing non-Canadian IMGs in sought-after postgraduate training spots" (Walsh 2011, 14). CSA applicants increased tenfold between 2002 and 2013 (from approximately 70 to 709). The percentage of successful CSA matches increased from 34 percent in 2002 to 52.5 percent in 2008 and then declined to 36 percent in 2013 (CaRMS 2012; Kwong 2014; Szafran et al. 2005; Thomson and Cohl 2011). International medical schools produce about 700 CSA graduates per year, about one-third of Canadian medical schools' output (CaRMS 2010). As of 2014, there were approximately 3,600 Canadians studying medicine abroad while there were only 3,280 residency training positions in Canada. Canadian medical school graduates (CMGs) took 2,900, leaving 11 percent of the spots for IMGs, CSAs, and visa trainees.[3] An over-supply of medical graduates for residency positions seems to be evolving (Barer, Evans, and Hedden 2014a, 2014b; Sheppard 2011).

Moreover, Fréchette and colleagues (2013) point out that, for the first time in history, physicians, particularly specialists, are facing precarious employment circumstances: 16 percent of new specialists have been unable to find work and 31 percent have undergone additional training to be more employable. Growth in the supply of physicians is outpacing population growth and pushing against capacity constraints in Canada's medical infrastructure due to increases in the number of Canadian medical graduates and foreign-trained physicians seeking licensing in Canada. These increases are the result of government policies to recognize foreign credentials and of Canadians obtaining international medical degrees and returning to Canada to practise. Moreover, while increasing numbers of physicians are graduating, recent economic circumstances may be forcing some physicians to postpone their retirement plans, and emerging health care models that rely less on physician-centric care and focus on inter-professional, collaborative practices may be decreasing the demand for physicians. Also, new medical graduates may not be staying in the communities in which they have trained and are needed, leading to imbalances in some areas (see, for example, McDonald and Worswick 2010). As well, personal characteristics, such as age at practice entry, family responsibilities, and preferences may influence and/or limit choices of practice[4] (Fréchette et al. 2013).

Understanding how residents intend to practise should provide policy-makers with important health human resource planning information. For example, McDonald and Worswick (2010) point out that while policy-makers have attempted to entice IMGs to underserviced areas through financial incentives and ROS Agreements, 66 percent of new foreign-trained physicians and 72 percent of new foreign-trained specialists have left the region in which they first practised, compared to only 34 percent of new Canadian-trained physicians. Large cities have been the final destination for many immigrant physicians recruited to small and/or rural areas.

Studies comparing CMGs to IMGs, CMGs to CSAs, or IMGs to CSAs are available. CSAs are more likely than CMGs to be: male, older, unmarried, children of physicians, and graduates of Ontario or British Columbia high schools. CSAs are also more highly educated and have significantly higher debt levels (CaRMS 2010). CSAs' median debt was C$160,000, compared to CMGs' median debt of C$71,000 (Merani et al. 2007). CSAs were likely to have applied fewer times to Canadian medical schools than CMGs, and about 6 percent entered an international medical school directly out of high school. As well, 90 percent of CSAs want to return to Canada for their residency training (CaRMS 2010). CMGs have more diverse socio-economic status and are "more likely to practice in rural settings" than CSAs (Kwong 2014, 3).

Compared to CSAs, Szafran and colleagues (2005) found that IMGs are more likely: to be older and married, to have dependent children, more years of postgraduate training and clinical experience, and to have received their medical degrees earlier. CSAs and IMGs have similar numbers of residency matching cycles, but CSAs are more likely to obtain residency positions. Many of the challenges faced by IMGs are a result of communication and cultural differences (Hall et al. 2004; Pilotto, Duncan, and Anderson-Wurf 2007; Thomson and Cohl 2011). However, CSAs have grown up in Canada. Compared to CMGs, IMGs are: older, more likely to be males, and increasingly more likely to practise as family physicians than as specialists (Mok et al. 2011). IMGs tend to fare worse on written exams and have lower ratings in their residency programs than do CMGs. However, they perform at least as well in clinical practice (Andrew 2010; Boulet et al. 2006; Ko et al. 2005; Norcini, Anderson, and McKinley 2006; Norcini et al. 2010).

Having grown up in Canada, CSAs' medical practice preferences may differ from other IMGs. However, having been trained outside Canada, their preferences may differ from those of CMGs. In this study, we add to the literature by examining the differences in: demographic characteristics, education, medical-training debt, and future practice intentions of CMG, IMG, and CSA medical residents in Canada. We are not aware of other studies

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that have examined these three groups simultaneously. Policy-makers should find the information beneficial in addressing future health human resource demands. We focus on answering several policy-related questions:

- Which group of trainees is more likely to state they will remain in Canada and/or in the region where they completed their residency?
- Which group is more likely to report being unsure of where they will practise (indicating at least some contemplation of migration)?
- Is one group more likely to state they prefer interprofessional or other alternatives to sole practice?
- Which group reports being willing to accept alternative payment mechanisms, thus being less reliant on fee-for-service (FFS) payment?
- Which group is more likely to report they accepted service contracts and, due to their current policy relevance in Canada, are more/less likely to use electronic medical records (EMRs)?
- Finally, given previously demonstrated differences in demographics and other characteristics, we investigate which individual and/or family characteristics may be associated with residents' intentions towards their medical practices. Policy-makers should be aware of whether variations in personal/family characteristics are associated with differences between the three groups' intentions or whether the (dis)similarities can be attributed to unobservables.

Data

We use the 2004, 2007, and 2010 Canadian National Physician Survey (NPS) of physicians in residency training. The NPS is the result of the collaboration between: the Canadian Medical Association (CMA), the Royal College of Physicians and Surgeons Canada (RCPSC), the College of Family Physicians of Canada (CFPC), and the Canadian Association of Internes and Residents (CAIR)[5] (NPS 2011). The NPS provides the only publicly available data that we are aware of on resident physicians' demographics, training, and practice intentions. The response rates were 30 and 36 percent in 2004 and 2007 (Grava-Gubins and Scott 2008), with 598 and 727 observations in 2004 and 2007, respectively. The 2010 data set offered substantially more observations, 2,546, but the response rate was lower than in the previous surveys at 20.3 percent. Even with the lower response rate, the data were reported to be representative of the 2010 population of medical residents in Canada (NPS 2011). The responses of three distinct subsamples of medical residents: CMGs, IMGs, and CSAs are identified.

Following the MCC definition, CMGs are identified as individuals (irrespective of residency status) who received their degree from an accredited Canadian or US medical school. IMGs include individuals who received their medical degree outside Canada or the United States and were neither Canadian citizens nor permanent residents at that time (visa trainees are excluded). CSAs are Canadian citizens or permanent residents who received their medical degree outside a Canadian or US institution. NPS respondents report immigration status at the time of the survey, not their immigration status when they graduated medical school; the majority of international graduates received their medical degrees between five and 28 years prior to the survey. Fortunately, survey respondents report their country of birth and the country in which they grew up before entering university. We argue that growing up in Canada before attending university may be a better indicator of citizenship at the time of entering medical school than birth in Canada, as 16 percent of Canadians are naturalized citizens.[6] Sensitivity analyses indicate that the two definitions present fairly consistent results (available upon request). Thus, we identify those who grew up in Canada as *Canadian* (either CMG or CSA) and those who grew up outside Canada as *immigrants* (IMGs or CMGs). Our final sample includes 3,197 CMGs, 304 IMGs, and 117 CSAs; 88 percent were Canadian trained and 12 percent, foreign trained. Our sample seems to represent fairly accurately the proportion of foreign-trained medical graduates in Canada.

Methodology

Policy-relevant practice intentions and the possible influences on these intentions are the focus of this study. We begin by comparing self-reported demographic characteristics, including: age, sex, marital status, presence and age of dependent children, education, and medical-training debt across the three resident groups. Policy-relevant practice intentions are then examined. Respondents were asked to indicate whether they intend, do not intend, or are unsure of their intentions towards aspects of their medical practice upon completing residency training. Self-reported practice intentions include: whether the respondent intends to practise in Canada and/or their region of residency training; whether or not they intend to practise in a solo, group, interdisciplinary, or other type of practice; what their preferred payment mechanism is (i.e., FFS, salary, capitation, blended or other payment mechanism); if they plan to use EMRs; and whether or not they agreed to a service contract. A value of one was assigned if the resident agreed with the statement, a zero if they did not agree, and a missing value if they were unsure (e.g., stay in Canada equals one if the resident stated they intend to stay in Canada to practise, but equals zero if they stated they did not intend to stay, and equals missing for those who were unsure). When examining whether or not respondents were sure/unsure of their intentions, a value of one was assigned to those who stated they were unsure of their intention and a zero to those who were sure (either positively or negatively).

Multivariate regression analysis provides indications of whether CMGs, CSAs, and IMGs have dissimilar practice intentions, controlling for differences in demographics, education, and medical-training debt. The results presented are odds ratios obtained from simple logit regressions on individual responses.[7] Two models are examined. Model 1 includes controls for demographics and education, and Model 2 adds controls for level of debt. In the multivariate analysis, the base group is CMGs. The results should be interpreted as the odds that IMGs/CSAs report a given intention relative to the odds a CMG reports the same intention controlling for the given set of characteristics.

Results

Table 1 presents the demographic characteristics of CMGs (base case), CSAs, and IMGs. The first column of results presents the proportion of CMGs reporting each characteristic. The second and third columns present the proportion of CSAs and IMGs, respectively. Symbols ($^{*,\wedge,\sim}$) report significance level of differences between CMG and CSA, or CMG and IMG. Letters (^{a,b,c}) report significance level of differences between CSA and IMG. In most cases, the demographic characteristics of IMGs are significantly different from those of CMGs. CSAs report significantly differently from IMGs for most characteristics and from CMGs for about half. CSAs are three years older, on average, than CMGs while IMGs are almost nine years older. CSAs (IMGs) are, on average, 20 (10) percentage points less likely to be female than CMGs. IMGs are more likely than CMGs to: be married (86 percent versus 57 percent), have children (69 percent versus 17 percent), and have young children (30 percent versus 15 percent). CSAs are significantly more likely than CMGs to have children (28 percent versus 17 percent), but are similar when it comes to marital status and the presence of young children. The differences between CSAs and IMGs across individual and family characteristics are all statistically significant at 5 percent or less.

IMGs are more likely to have no post-secondary training before entering medical school and fewer years of training on average than the other two groups. CMGs and CSAs have just over three years of post-secondary training, on average, while IMGs have fewer than two years. CSAs are almost 10 percentage points more likely to have some post-secondary training than CMGs, and IMGs are 30 percentage points less likely, on average; 46 percent of CMGs have no post-secondary degree (43 percent of these respondents are CEGEP graduates) while 37 percent of CSAs have similar education (only 10 percent are CEGEP graduates). CSAs are slightly more likely than CMGs to have a bachelor's degree, but a similar proportion have higher degrees. The vast majority of IMGs have no post-secondary degree[8] and they are significantly less likely than CMGs to have a bachelor's or master's degree; however they are significantly more likely to have a PhD (9 percent versus 3 percent). IMGs are less likely than CSAs to have a bachelor's, but not a master's degree. CSAs have held their medical degrees almost twice as long as CMGs before entering their residency program while IMGs have held theirs six times as long (12.3 years versus two years).

The three groups of residents are significantly different when it comes to indebtedness. IMGs have substantially less debt than either CSAs or CMGs. Expected level of

Table 1: Descriptive Statistics

	CMG	CSA	IMG
Age	29.0	32.3*	37.7*[a]
Female	0.63	0.43*	0.53^[b]
Married	0.57	0.57	0.86*[a]
Has children	0.17	0.28^	0.69*[a]
Has children < 4 years	0.15	0.19	0.30*[b]
Years post-secondary	3.16	3.13	1.67*[a]
No post-secondary	0.46	0.37~	0.78*[a]
BSc/BA	0.40	0.49^	0.08*[a]
Master's	0.11	0.09	0.05*
PhD	0.03	0.05	0.09*[c]
Year received MD	2007	2005^	1996*[a]
Years since received MD	2.03	3.95^	12.16*[a]
Zero debt[d]	0.15	0.09~	0.20[b]
Debt $1–$20K[d]	0.14	0.08	0.19^[b]
Debt $20,001–$40K[d]	0.09	--^	0.06
Debt $40,001–$60K[d]	0.09	0.07	0.06
Debt $60,001–$80K[d]	0.08	--^	--^
Debt $80,001–$100K[d]	0.07	--	0.07
Debt $100,001–$120K[d]	0.05	0.06	--^[c]
Debt $120,001–$160K[d]	0.09	0.07	0.03^
Debt over $160K[d]	0.12	0.34*	0.10[a]
Debt missing[d]	0.12	0.23^	0.25*
Resident in British Columbia	0.11	0.07	0.10
Resident in Alberta	0.12	0.06~	0.15[b]
Resident in Prairie provinces	0.06	0.12^	0.14*
Resident in Ontario	0.33	0.47^	0.41^
Resident in Quebec	0.30	0.12*	0.15*
Resident in Atlantic provinces	0.08	0.16	0.06^[b]
Number of observations	3197	117	304

Notes: CMG = Canadian medical graduate. CSA = Canadian studying abroad. IMG = international medical graduate.
*, ^, ~: significantly different than CMG at 0.000, 0.05, 0.100, respectively.
[a, b, c] IMG significantly different than CSA at 0.000, 0.05, 0.100, respectively.
[d] debt controls for years since graduation from medical school.
-- indicates response cannot be reported due to small cell size.
Sample excludes visa trainees.
Source: Authors' calculations.

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medical-training-related debt at the end of residency is likely to be highly correlated with the length of time since the individual was in medical school. IMGs have many more years, on average, to pay off debt accumulated in medical school before entering residency in Canada than do either CMGs or CSAs. Therefore, we control for the number of years since graduating whenever we examine debt. Debt is also likely to vary with length of residency program; some specialty residencies are much longer than family medicine residencies. However, we have no information on length of program other than whether or not the respondent is in family medicine or a specialty. We also note that CMGs and IMGs are unconditionally more likely than CSAs to be in specialty programs, which are longer than family residency programs, but that CSAs have higher expected debt.

By the time they finish their residency program, 20 percent of IMGs expect to have collected no medical-training-related debt, compared to approximately 14 percent of CMGs and 9 percent of CSAs (CSAs are significantly different from IMGs, but are similar to CMGs). Over one-third of CSAs report expecting medical-training debts of over $160,000, significantly more than CMGS (12 percent) and IMGs (10 percent). Approximately one-quarter of IMGs and CSAs do not report their debt level, twice the proportion of CMGs who do not report. CSAs were less likely than CMGs to report being in residency programs in Alberta and Quebec and more likely to report being in the Prairie provinces, Ontario, or the Atlantic provinces. IMGs were more likely than CMGs to report being in residency programs in the Prairie provinces and Ontario, and less likely to report being in Quebec or the Atlantic provinces. The difference across regions in the proportion of CMGs, IMGs, and CSAs may be due, in part, to the (non)existence of residency rules for medical schools and residency programs or to the fact that some provinces are more likely than others to see CSAs/IMGs as a way to bolster their supply of physicians in the short run (Fréchette et al. 2013). Although it is not possible to address the issue in this study, we flag the idea for future research.

The concern with foreign-trained physicians is, at least in part, whether or not their medical training compares to that of CMGs. The medical-training information in the survey is limited to country, and sometimes to name of institution. Table 2 presents the country where CSAs and IMGs report receiving their medical degree. All CMGs graduate from accredited Canadian/American medical schools. The distribution of CSAs and IMGs across countries is significantly different (p=0.000). IMGs are substantially and significantly less likely than CSAs to graduate from a UK or Central America/Caribbean medical school. IMGs are significantly and substantially more likely to receive their degrees in the Middle East and Eastern Europe and significantly and slightly more likely to receive them in South America. The two groups are just as likely to graduate from medical schools in Western Europe, Africa, and Asia.

Table 2: Country Where Resident Obtained Medical Degree if outside Canada

	CSA	IMG[d]
United Kingdom	0.288	0.039[a]
Central America/Caribbean	0.169	0.016[a]
South America	0.059	0.065
Western Europe	--	0.037
Eastern Europe	0.102	0.181[b]
Africa	0.068	0.102
Middle East	0.093	0.387[a]
Asia	0.195	0.170
Number of observations	117	304

Notes: CSA = Canadian studying abroad. IMG = international medical graduate.
[a, b, c] IMG significantly different than CSA with a p=0.000, p<=0.05, p<=0.100, respectively.
-- indicates response cannot be reported due to small cell size.
[d] the distribution of CSAs and IMGs across countries is different at p=0.000.
Sample excludes visa trainees.
Source: Authors' calculations.

Self-reported practice intentions are reported in Table 3. Approximately one-third of CMGs are in family residency programs and two-thirds are in specialty programs, which is not significantly different from IMGs. A significantly higher proportion of CSAs are training to be family physicians than are both CMGS and IMGs (46 percent compared to 30 and 32 percent, respectively). Nearly all the residents claim that they intend to stay in their current choice of family or specialty medicine when they have completed residency. A substantial portion of each group (close to 40 percent) are unsure of their preferences for reimbursement. Of those who have decided, CMGs and CSAs do not report significantly differently; both groups are most likely to prefer blended payment methods, and salary/FFS are the second choices. IMGs are more likely than the others to report preferring salary and other payment schemes, but they are less likely to report preferring blended payments (significantly lower than CMGs). The three groups prefer FFS equally at about 11 to 13 percent. The proportion of each group claiming they would seek capitation as a form of reimbursement upon finishing their residency was so small that multivariate results could not be obtained; however, IMGs were most likely to report being willing to do so.

All three groups report similar intentions towards their intended practice type. About one-third of each group are unsure of their practice intentions, just over one-third will

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Table 3: Proportion Self-reporting Given Practice Intentions

	CMG	CSA	IMG
Practice?			
Family resident	0.300	0.460*	0.320[b]
Specialty resident	0.700	0.540*	0.680[b]
Stay in family practice (FP)	0.944	1.000	0.942
Unsure stay in FP	0.105	0.068	0.044~
Payment Preference?			
Fee for service (FFS)	0.130	0.134	0.107
Salary	0.135	0.107	0.182^[b]
Capitation	0.006	--	0.014
Other	0.027	--	0.069^[b]
Blended	0.346	0.281	0.271^
Unsure	0.362	0.446~	0.371
Practice Type?			
Solo	0.031	0.045	0.046
Group	0.464	0.522	0.442
Inter-professional	0.363	0.388	0.342
Other	0.061	--	0.057
Unsure	0.302	0.320	0.306
Other			
Use electronic medical records (EMRs)	0.855	0.963^	0.965*
Service contract	0.089	0.361*	0.268*[b]
Practice Where?			
Stay in Canada	0.932	0.859^	0.840^
Unsure stay in Canada	0.241	0.333^	0.247[c]
Stay in region	0.864	0.809	0.823~
Unsure stay in region	0.286	0.197^	0.220^
Number of observations	3197	117	304

Notes: CMG = Canadian medical graduate. CSA = Canadian studying abroad. IMG = international medical graduate.
*, ^, ~ : significantly different than CMG with a p=0.000, p<=0.05, p<=0.100, respectively.
[a, b, c] IMG significantly different than CSA at 0.000, 0.05, 0.100, respectively.
-- indicates response cannot be reported due to small cell size.
Sample excludes visa trainees.
Proportions may not add to one due to rounding and/or multiple choices were permitted.
Source: Authors' calculations.

seek an inter-professional practice, and close to one-half will seek a group practice. Less than 6 percent of each group intend to work in a solo practice or other practice types. Among CSAs, 36 percent have agreed to a service contract after their residency period; among IMGs, 27 percent have agreed. Finally, over 96 percent of both CSAs and IMGs intend to use EMRs, while only 86 percent of CMGs intend to do so.

Perhaps most interesting is where residents intend to set up practice. Almost one-quarter of CMGs and IMGs and one-third of CSAs are not sure whether they will remain in Canada to practise upon completion of their residency. Of those who are decided, 14 and 16 percent of CSAs and IMGs, respectively, state that they intend to leave Canada to practise—more than double the proportion of CMGs (7 percent). IMGs are statistically (10 percent level) more likely than CMGs (14 percent versus 18 percent) to state that they intend to leave the region; a higher proportion of CSAs report that they will leave, but the difference is not statistically significant.

We further examine the intention to stay/leave the region of residency (Tables 4a and 4b). The number of IMGs and CSAs who have made the decision to stay/leave is very small in some regions; so controls cannot be added to the interprovincial analysis. All three groups of residents who have decided are more likely to intend on staying in British Columbia and Ontario than in other regions. IMGs and CSAs almost unanimously report that they intend to stay in Alberta, while almost one-quarter of CMGs state that they will leave Alberta. For the decided, the Prairie provinces fare the worst, with 31 percent of CMGs, 36 percent of IMGs, and 57 percent of CSAs reporting that they intend to leave when their residency is complete. Most residents studying in Ontario intend to stay (90 percent or more of each group). While a strong proportion of CSAs and CMGs training in Quebec intend to stay to practise, fewer than half of the IMGs do. The Atlantic provinces fare only slightly better than the Prairie provinces: 83 percent of IMGs intend to stay, but only 62 percent of CMGs and 38 percent of CSAs claim they will stay.

Table 4a: Residents Reporting Will Stay in Region of Residency Training

Training	CMGs	CSAs	IMGs
All regions	0.86	0.82	0.81~
British Columbia	0.91	1.00	0.92
Alberta	0.78	1.00	0.97^
Prairie provinces	0.69	0.43	0.64
Ontario	0.90	0.92	0.92
Quebec	0.90	0.82	0.47*[b]
Atlantic provinces	0.62	0.38~	0.83[b]

Notes: CMG = Canadian medical graduate. CSA = Canadian studying abroad. IMG = international medical graduate.
*, ^, ~ : significantly different than CMG with a p=0.000, p<=0.05, p<=0.100, respectively.
[a, b, c] IMG significantly different than CSA at 0.000, 0.05, 0.100, respectively.
-- indicates response cannot be reported due to small cell size.
Sample excludes visa trainees.
Source: Authors' calculations.

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Table 4b: Residents Reporting Unsure Will Stay in Region of Residency Training

Training	CMGs	CSAs	IMGs
All regions	0.29	0.20^	0.22^
British Columbia	0.27	0.00	0.17
Alberta	0.50	0.29	0.31^
Prairie provinces	0.41	0.50	0.38
Ontario	0.26	0.11^	0.12^
Quebec	0.19	0.21	0.26
Atlantic provinces	0.38	0.28	0.29

Notes: CMG = Canadian medical graduate. CSA = Canadian studying abroad. IMG = international medical graduate.
*, ^, ~ : significantly different than CMG with a p=0.000, p<=0.05, p<=0.100, respectively.
[a, b, c] IMG significantly different than CSA at 0.000, 0.05, 0.100, respectively.
-- indicates response cannot be reported due to small cell size.
Sample excludes visa trainees.
Proportions may not add to one, as rounding and/or multiple choices were permitted.
Source: Authors' calculations.

Table 4b shows that 20 percent of CSAs and 22 percent of IMGs are undecided as to whether or not they will stay in the region where they trained—significantly lower than the 29 percent of CMGs who are unsure. No CSAs in British Columbia are undecided, but 22 percent of IMGs and 27 percent of CMGs are. About 30 percent of IMGs and CSAs are unsure whether they will remain in Alberta to practise, compared to half of CMGs. One-quarter of CMGs are undecided about staying in Ontario—more than double the proportion of IMGs and CSAs. About one-fifth of CMGs and CSAs in Quebec have not made a decision on whether they will stay to practise, compared to one-quarter of IMGs. Finally, just over one-quarter of IMGs and CSAs are undecided about practising in the Atlantic provinces (about 10 percentage points lower than CMGs).

There are some significant differences across practice intentions. It is also clear that the characteristics of IMGs, CSAs, and CMGs are quite different. Given the substantial differences in characteristics, in Table 5 we examine the preference for family medicine compared to specialty medicine and other policy-relevant practice intentions, controlling for differences in characteristics. Model 1 controls for sex, marital status, presence and ages of children, education, and the number of years since graduating from medical school. Model 2 adds self-reported debt accumulated from medical-training expenses. The base case is CMGs, so the reported results in Columns 2 and 4 are the odds that CSAs are more (greater than one) or less (less than one) likely to report a given practice intention compared to the odds that CMGs report the same. Columns 3 and 5 report the odds that an IMG is likely to report the intention relative to the odds that a CMG is likely to do so.

Model 1 indicates that, when comparing like individuals, the odds that a CSA reports being in family medicine are 2.5 times those for a CMG; and that IMGs report odds that are 1.9 times those of CMGs, after controlling for debt increases the difference for both CSAs and IMGs. The odds that a CSA reports they intend to stay in Canada are not significantly different than the odds that a CMG reports the same in Models 1 and 2. In comparison, the odds an IMG reports wanting to stay in Canada are 85 percent lower than the odds a CMG reports the same after controlling for individual and family characteristics and then debt. The odds IMGs and CSAs report being unsure of their willingness to stay in Canada are significantly higher (50 percent) than the odds a CMG reports the same in Model 1, but are no longer significantly different in Model 2. Of those who have decided, CSAs and CMGs report similar odds of intending to stay in the region of their residency program when entering practice. The odds an IMG reports they intend to stay where they did their residency are substantially lower than that of CMGs, about two-thirds lower in both models. CSAs are half as likely as CMGs to be unsure of whether or not they will stay in the region where they spent their residency; IMGs are not significantly different from CMGs.

There are no statistically significant differences between groups in the odds of reporting preferences for FFS or salary payments in either model. Both IMGs and CSAs are significantly and substantially more likely (almost twice) to be unsure of their preferences over payment mechanisms than CMGs. The odds IMGs report wanting other payment types are five times those of CMGs when controlling for demographics, and this increases to over six times when debt controls are added, but the proportion of any group reporting preference for other payment mechanisms was less than 6 percent.

There are few significant differences between IMGs or CSAs and CMGs when it comes to reported preferences over practice style upon finishing their residency. The only strongly significant difference between IMGs and CMGs is in reporting whether or not they are sure about their intended practice style: IMGs report the odds of being unsure are 1.8 times that of CMGs after adding all controls.

The odds a CSA reports having a service contract are about six times those of a similar CMG, but drop to 5.5 times when debt is controlled for. The odds an IMG reports having a service contract are about eight times those of a similar CMG in Model 1 and increase to almost 12 times when debt levels are added as controls. IMGs and CSAs are significantly and substantially more likely to use EMRs; the odds are ten and 22 times, respectively, those of CMGs.

As expected, some characteristics had strong influences on the practice intentions of the residents including age,

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Table 5: Relative Odds (Compared to CMG) of Self-reporting Given Practice Intention

	Model 1		Model 2	
	CSA	IMG	CSA	IMG
Practice?				
Family	2.503*	1.893*	2.967*	2.149*
Practice Where?				
Stay in Canada	0.660	0.152*	0.761	0.157*
Unsure stay in Canada	1.623^	1.483~	1.381	1.377
Stay in region	0.724	0.297*	0.832	0.295*
Unsure stay in region	0.534^	1.030	0.505^	0.997
Payment Preference?				
Fee for service (FFS)	0.916	0.658	0.868	0.625
Salary	0.709	1.176	0.718	1.178
Other	0.728	5.339*	0.842	6.176*
Blended	0.669~	0.387*	0.732	0.431*
Unsure	1.808^	2.005^	1.685^	1.830^
Practice Type?				
Solo	0.776	1.563	0.755	1.605
Group	1.142	1.299	0.978	1.351
Inter-professional	1.339	0.834	1.534	0.801
Other	0.449	0.463~	0.443	0.469
Unsure	1.316	1.913^	1.391	1.831^
Other				
Use electronic medical records (EMRs)	9.856^	19.00*	10.18^	21.55*
Service contract	6.051*	8.211*	5.432*	11.73*

Notes: CSA= Canadian studying abroad. IMG = international medical graduate.
*, ^, ~: significantly different than CMG with a p=0.000, p<=0.05, p<=0.100, respectively.
Model 1 controls for demographics, education, and years since completing medical school.
Model 2 adds controls for debt level. Comparator single, 29 year old, male, CMG, with no children, no post-secondary degree, zero years since graduated medical school and no debt.
Sample excludes visa trainees.
Source: Authors' calculations.

sex, marital status, the presence of children, education, and years since medical degree (full results available upon request). Notably, female residents were twice as likely as males to report they would stay in Canada, and those with children were almost twice as likely as those without to report their intent to stay. Female and married residents were less likely to be unsure of their intentions to stay in Canada; older residents were slightly less likely than younger to report similarly. Residents who were married and had older children were substantially less likely than their counterparts to state they intended to leave the region, but were also more likely to report being unsure of that intention. Older residents and those with small children were less likely to report they intended to stay in the region, and those with higher levels of education were more likely to be unsure about staying. Females were substantially less likely to intend to seek FFS payment and more likely to seek a salary and avoid sole practice. They were also about half as likely as their male counterparts to use EMRs.

Sensitivity Analyses

The analyses were completed using alternate definitions of immigrant/non-immigrant status at time of medical school graduation, adding controls for country of education, and including time trends and year dummies. The results were substantively similar when using the alternate definitions. Although significance waned when adding more controls and some coefficients could not be estimated due to small samples of CSA and IMGs, the magnitudes of the coefficients remained stable when they were estimated.

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Conclusions and Policy Implications

In summary, there are some interesting similarities and differences between CMGs and CSAs or IMGs in Canada. Specifically, CSAs are more similar to CMGs than IMGs in demographic characteristics and practice intentions, but differ most from both CMGs and IMGs in terms of debt. It is notable that CSAs are, on average, a few years older than CMGs, two-thirds as likely to be female, and about 1.5 times as likely to have children. IMGs are half as likely to be female, 1.5 times more likely to be married, four times more likely to have children, and twice as likely to have young children. IMGs have fewer years of post-secondary training, lower levels with bachelor's and master's degrees, but higher proportions with PhDs. Although differences in debt levels were significant across the three groups, controlling for the differences changed the policy implications little.

There are two main messages that policy-makers should take away. First, of those who were certain, IMGs are substantially less likely than CMGs to report they intend to stay and practise in Canada (85 percent less likely) or in the region where they completed their residency training (70 percent less likely) after controlling for differences in characteristics; CSAs and CMGs report similarly. However, CSAs are half as likely as CMGs to report being unsure of their willingness to stay to practise in the region where they completed their residency. Second, IMGs and CSAs are more than twice as likely to report being in family medicine than comparable CMGs. There were few significant policy-relevant differences in reporting of preferred payment mechanisms or practice types other than CSAs and IMGs being more than twice as likely as CMGs to be unsure of their preferences over payment mechanisms and IMGs being almost two times more likely than CMGs to be unsure of their preferences over practice style. CSAs and IMGs are both significantly more likely than CMGs to have agreed to a service contract and to intend to use EMRs.

The results have important implications in light of the current, complex health human resources situation. On one hand, policy-makers are in the process of re-evaluating the recognition and accreditation process for foreign-trained medical doctors as a potential solution to ongoing perceptions of an undersupply of physicians, at least in some areas. On the other hand, some new physicians, particularly specialists, are unable to find adequate employment in some areas. If offering more residency positions is seen as a solution to physician supply in underserviced areas, policy-makers may want to take note of the fact that IMGs are more likely than CMGs to report intentions of leaving the region where they are completing their residency, and they are less likely to report they will stay in Canada. After controlling for characteristics, this gap intensifies supportive findings by McDonald and Worswick (2010). The result that CSAs and IMGs are more likely to undertake family medicine training than CMGs adds to current knowledge (Mok et al. 2011). Given that primary care is an issue in many underserviced areas and that the underemployment of physicians seems, at least at the moment, to be an issue for specialists rather than primary care physicians, this finding is worth noting.

The fact that CSAs are less likely than IMGs to be married or have children and are more willing to remain in Canada may also be advantageous, as they may also be more willing and able to move to underserviced areas in the early stages of their practice. The fact that CSAs have higher debt levels than CMGs and IMGs may make them more amenable to participating in ROS arrangements (they are substantially more likely than CMGs to be in such arrangements) or other programs that offer financial incentives to move to underserviced areas. IMGs are also more likely than CMGs to report having signed a service contract, but this is a requirement in some provinces (Thomson and Cohl 2011), and IMGs may be more likely to move to another region or even out of Canada when the contract is complete (McDonald and Worswick 2010).

Potential socio-economic distributional issues should also be considered by policy-makers. Canadians who can afford to attend expensive international medical schools may be from higher socio-economic circumstances than those who cannot. CSAs are more likely than CMGs to be children of physicians (CaRMS 2010) and to be less economically diverse (Kwong 2014) than CMGs. In addition, IMGs and CSAs are substantially less likely to be female than CMGs; therefore, increasing their representation in residency programs may change the SES and gender distribution of training and practising physicians that Canadian medical schools attempt to manage through medical school entrance protocols (residency rules and proportion of females, immigrants, etc.) (Kwong 2014)). However, Canada has areas with substantial immigrant populations that may be better served by having physicians with similar language and cultural backgrounds (Wang et al. 2007).

Study Limitations

Health human resource planning is an extremely difficult process due to its complexity. This study offers some important information for those setting policy in this area. However, as with all studies relying on self-reported data, our study has limitations. The sample, particularly of CSAs and IMGs, is small. Further research utilizing larger samples is recommended to confirm the findings of this study and to investigate some of the relationships in greater depth. More information on the international medical schools and the reasons CSAs choose to study outside Canada would be helpful.

As survey respondents are not randomly selected, there is the possibility of selection bias. In particular, the respondents are residents who were matched to residency spots. Some of the differences between the groups may reflect, at least in part, the screening criteria and the non-random matching process and result in the fact that CSAs are more similar to CMGs. Unfortunately, we have no information on those applying for residency spots.

The respondents completed the survey online, and their responses are self-reports of characteristics and intentions. There are no questions that test the validity of the responses, and including some would increase usefulness of the survey. Finally, there is no way of knowing whether stated intentions are a reflection of final decisions. A study designed to examine whether reported intentions align with final practice decisions would be interesting (in aggregate at a minimum and for individual residents through longitudinal studies at best). However, the fact that the results of this study are similar to those found elsewhere in the literature adds some validity and should offer some comfort in the policy prescriptions.

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Notes

1 There are many reasons to study medicine internationally, such as: 1) Students who were not accepted at medical schools in North America may seek to go elsewhere, as only 25 percent of "qualified" applicants are accepted to Canadian medical schools (Association of Faculties of Medicine of Canada 2010); 2) The length of study is shorter at many international medical schools; and, 3) Catering to North Americans is profitable for foreign medical schools as CSAs are likely to pay higher tuition rates than their domestic counterparts or CMGs in Canada (Barer, Evans, and Hedden 2014a, 2014b; CaRMS 2010; Sheppard 2011).

2 IMGs who are ready to practise medicine without a full residency program may apply for the "Practice Ready Assessment Route" in accordance with provincial regulations. "Individual Competency Assessment" exists for IMGs who are recognized to have developed competencies in their international training (for a brief discussion of the alternative evaluation processes for IMGs see "Multiple Routes to Certification" (RCPSC 2015)).

3 Some postgraduate medical training positions are available for non-citizen or non-resident IMGs through foreign visa trainee programs. These positions are generally sponsored by the home countries of the IMGs with the stipulation that the IMGs return to practise in their countries (Truscott 2008). While visa-trainee IMGs provide health care to Canadians during their training, their obligation to leave results in no long-term benefit to Canada.

In 2004 and 2007, the immigration questions in the survey identified "Canadian residents, permanent residents, and others." In 2010, "others" was further delineated into several groups, including visa trainees. The vast majority of the "others" category were visa trainees in 2010, and 19 percent of all IMGs reported their immigration status as "visa trainee" in that year. Following, the 2010 distribution, we assumed the vast majority of residents reporting immigration status of "other" were visa trainees and dropped them from the study.

4 For example, the presence of spouse and children may limit the ability to move to take up employment, or high levels of debt may lure new physicians to regions with higher earnings potential.

5 This organization is now known as Resident Doctors of Canada.

6 In 2011, 15.8 percent of the Canadian population were Canadian citizens by naturalization. Naturalization is the process through which immigrants acquire citizenship. The criteria for acquiring citizenship generally include a residency requirement, knowledge of English or French, and basic knowledge of Canada (Statistics Canada 2013).

7 Where appropriate, responses were grouped in ordered categories (e.g., stay in Canada or stay in region contained three answers that could be ordered: one equaled no; two equaled unsure; and three equaled yes) or non-ordered categories (e.g., payment mechanism included six non-ordered categories: FFS, salary, capitation, blended, other payment, and unsure). Ordered logit and multinomial logit regressions were estimated for the ordered and non-ordered variables, respectively. The more complex estimation provided the same policy implications; thus we report the more easily interpreted logit results.

8 We have no information on the educational system's institutional arrangements across the different countries in which IMGs may have obtained their education. Many of the countries may allow or even require that medical students enter training directly out of high school, thus not obtaining a bachelor's degree of any type before their medical degree. As stated, this is the case for many Canadian CEGEP students. We control for education, as it may be the case that those who obtained a degree before entering medical school may have different life experiences and/or perspectives on health care than those who went directly into medical school (some Canadian medical schools see varied experiences before entering medical training as a positive).

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