

Examining the geographic distribution of French-speaking physicians in Ontario

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Abstract

Objective To determine how many physicians in Ontario express a proficiency in providing services in the French language, and to assess the geographic distribution of such physicians.

Design Population-based analysis of the 2007 College of Physicians and Surgeons of Ontario Annual Membership Renewal Survey.

Setting Ontario.

Participants A total of 22 688 GPs, FPs, and other specialists certified by the College of Family Physicians of Canada and the Royal College of Physicians and Surgeons of Canada who responded to the survey.

Main outcome measures First official language spoken and languages of competency to conduct practice.

Results The physician-to-patient ratio by first official language spoken is 1 physician per 138 Francophone patients in Ontario. There is 1 French-speaking GP or FP for every 297 Francophone patients, and most French-speaking physicians are located in southern Ontario (91.4%), at a ratio of 1 physician per 111 Francophone patients. The most promising French-speaking physician-to-Francophone patient ratios are found in southern Ontario (1:248 for GPs and FPs, and 1:202 for other specialists) and in urban Ontario (1:266 for GPs and FPs, and 1:209 for other specialists).

Conclusion Clearly, there is a promising number of physicians, relative to the amount of French-speaking residents in Ontario, who identified a competency in offering services in French. However, while the number of physicians who indicated a self-assessed competency to deliver health services in French is promising, it is the maldistribution of such services that is of concern. Thus, efforts must be made to attract French-speaking physicians to areas where there is the greatest demand, particularly in the northern part of the province.

EDITOR'S KEY POINTS

- While a number of physicians indicated a self-assessed competency to deliver health services in French, it is the geographic maldistribution of such services that is of concern.
- This study revealed a substantial disparity when comparing the southern and northern regions of Ontario. The smallest French-speaking physician-to-Francophone patient ratios were all found in southern Ontario. More important, the ratios in northern Ontario, both urban and rural, resembled those of rural areas in southern Ontario.
- Ratios of French-speaking non-FP specialists to Francophone patients were also gravely unbalanced when comparing rural-northern communities with urban-southern communities.

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Sur la distribution géographique des médecins francophones de l'Ontario

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Résumé

Objectif Déterminer combien de médecins ontariens se disent compétents pour fournir, des services en français et vérifier la distribution géographique de ces médecins.

Type d'étude Analyse démographique du rapport de 2007 sur la réinscription annuelle à l'Ordre des médecins et chirurgiens de l'Ontario.

Contexte L'Ontario.

Participants Un total de 22 688 omnipraticiens (OP), MF et autres spécialistes diplômés du Collège des médecins de famille du Canada et du Collège royal des médecins et chirurgiens du Canada qui ont répondu à l'enquête.

Principaux paramètres à l'étude Première langue officielle parlée et langues de compétence pour la pratique.

Résultats En Ontario, le rapport médecin/patient dans le cas de la première langue officielle parlée est de 1 médecin pour 138 patients francophones. On compte un OP ou MF francophone pour 297 patients francophones et les médecins francophones sont localisés pour la plupart (91,4%) dans le sud de l'Ontario, où on observe 1 médecin pour 111 patients francophones. C'est dans le sud de l'Ontario que le rapport médecin francophone/patient francophone est le plus favorable (1/248 pour les OP et les MF, et 1/1202 pour les autres spécialistes) et dans les milieux urbains (1/266 pour les OP et les MF et 1/1209 pour les autres spécialistes).

Conclusion Il est certain qu'en Ontario, il y a un nombre encourageant de médecins qui, par rapport au nombre de résidents francophones, se sont dits compétents pour offrir des services en français. Malgré ce rapport favorable, c'est la mauvaise distribution de ces services qui est préoccupante. Il faudrait donc s'efforcer d'attirer des médecins francophones dans les régions où la demande est la plus forte, notamment dans le nord de la province.

POINTS DE REPÈRE DU RÉDACTEUR

- Même si un bon nombre de médecins ont indiqué avoir la compétence pour fournir des services de santé en français, leur mauvaise distribution géographique demeure préoccupante.
- Cette étude a révélé une importante disparité entre les régions du sud et du nord de l'Ontario. Les plus faibles rapports médecin francophone/patient francophone se rencontraient tous dans le sud de l'Ontario. Ce qui est plus important, c'est que les rapports dans les régions urbaines et rurales du nord de l'Ontario ressemblaient à ceux des régions rurales du sud.
- On observait aussi d'importantes inégalités entre les collectivités rurales du nord et les collectivités urbaines du sud pour ce qui est des rapports entre spécialistes non francophones non MF et patients francophones.

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The Francophone population in Ontario has been traced back to the mid-17th century; and since these early settlements, the Franco-Ontarian community has developed into one that is known as being “vibrant, complex, and changing.”¹ According to a 2006 census, Franco-Ontarian people represent 4.8% (n=582 690) of the total population of Ontario.² The geographic distribution of French-speaking residents in Ontario is evolving.¹ Nearly two-thirds of Francophone people live in eastern (41.5%) and northeastern (22.5%) Ontario; and while they account for only 2% of the total population in central Ontario, 28.7% of Francophone people reside in this area. Further, it is estimated that 22% of the Francophone population in Ontario lives in rural areas.³ While we might know a lot about the geographic distribution of Francophone people in Ontario, we know less about the distribution of French-speaking physicians.

According to certain indicators, the health of the Francophone population in Ontario has been deemed at-risk. The Franco-Ontarian population was found to have a significantly higher prevalence ($P=.005$) of chronic illnesses (63%) when compared with the Anglophone and allophone populations combined (57.4%).⁴ This included higher percentages of cardiovascular disease (CVD), pulmonary diseases, arthritis or rheumatism, and asthma.⁴ Picard and Allaire found that the Francophone population in Ontario had a higher prevalence of obesity (17.7%) when compared with the provincial average (15%) ($P<.05$), and found that Francophone people in northern Ontario had the highest percentage of CVD (8.1% vs provincial rate of 5.3%) when compared with all other regions and sociolinguistic groups in the province.³ The Francophone population in northern Ontario was also least likely to report very good or excellent health status. Indeed, these lines of evidence converge in a manner that suggests Francophone people in Ontario experience poorer health than other Ontarians. Many of the discussions with regard to the health of French-speaking minority communities in Ontario have been related to access to French-language primary health care services.⁵⁻⁹ Primary health care is imperative in promoting health, preventing illness, and caring for and managing health problems.

In 1986, the Government of Ontario introduced the *French Language Services Act*, which guarantees the right to services in French from the provincial government when there is a regional demand.¹⁰ Despite such efforts, it has been suggested that French-language health services have “steadily regressed” in all areas of the province of Ontario.⁵ There are 3 main sources of information in this area of research. First, a report published by the Fédération des communautés francophones et acadienne du Canada concluded that 74% of the more than half a million Franco-Ontarian people said they had either no access at all or rarely had access to

hospital services in French.⁶ Only 12% claimed to always have access to hospital services in French. Second, the French Language Services Commissioner of Ontario, François Boileau, presented a series of anecdotal reports of inadequate access to services in the “Special Report on French Language Health Services Planning in Ontario” and alluded to a general maldistribution of services; the report claimed that “in some regions there are services, but they are tucked away, like well-guarded secrets.”⁷ More recently, in an analysis of the Survey on the Vitality of Official-Language Minorities, Gagnon-Arpin and Bouchard revealed that while 75% of Francophone people in Ontario found it important to receive services in French, only 33% reported having spoken to their FPs in French in the past 12 months.¹¹

The above-mentioned information appears to indicate, according to patient perceptions, that French-language primary health care services are not as accessible as one would hope. In 2010, the Canadian Institute for Health Information presented data that equate to a physician-to-patient ratio of 1:493 for the general Canadian population; and in Ontario the physician-to-patient ratio was 1:529 (1:1087 for GPs and FPs, and 1:1031 for other specialists).¹² Relevant to this paper, the exact prevalence and distribution of French-speaking primary health care providers has been somewhat elusive. The purpose of the current study is 2-fold: first, to determine how many physicians in Ontario express a proficiency in providing services in the French language; and second, to assess the geographic distribution of such physicians.

METHODS

Data and study population

In this descriptive secondary data analysis, encrypted data from the 2007 College of Physicians and Surgeons of Ontario Annual Membership Renewal Survey (CPSO Annual Survey) and the CPSO Register were used. This is a report on the geographic distribution of the 22 688 GPs, FPs, and other specialists certified by the College of Family Physicians of Canada and the Royal College of Physicians and Surgeons of Canada who responded to the survey and whose primary practice addresses were in Ontario. A 98% response rate to the survey is reported. The distribution of physicians was compared with that of the population of Ontario using census data from 2006. The following key variables were used as a basis of comparison: language spoken, size of community (rural vs urban), and geographic location (north vs south). The project was approved by the Research Ethics Board at Laurentian University in Sudbury, Ont.

Key variables

Language categorization. Physicians who indicated

on the CPSO Annual Survey that French was among the languages in which they were competent enough to conduct practice were classified as *French-speaking physicians*.

The first official language spoken was used to define the language of the population. This variable, produced by Statistics Canada, is derived by combining 3 census items: knowledge of Canada's 2 official languages, mother tongue, and language most often spoken at home. The "French" classification of first official language spoken is thus representative of those from Ontario who are fluent in French and speak it regularly, and it has the advantage of including Francophone people for whom French is a second language and excluding native-speaking Francophone people who more commonly speak English. Historically, the Francophone population has been defined in a number of ways¹³; therefore, we chose to isolate those who classified "French" as their only first official language spoken owing to the greater likelihood of their need and desire to receive health services in French. The remainder of the population was defined as *English and other* and represents those who were classified as "English," "English and French," "English and other," or "neither English nor French" for the first official language spoken. Those individuals were excluded from this study. A more detailed description of the "first official language spoken" derivation is available at the Statistics Canada website.¹⁴

Community size categorization. The geographic location of the primary practice address was identified using the 6-character postal code contained in the CPSO registration database. Primary practice postal codes were linked to Canadian census subdivisions, employing Statistics Canada's Postal Code Conversion File. Likewise, population data divided by census subdivision were obtained from Statistics Canada. The data were coded for degree of rurality employing Statistics Canada's census metropolitan area (CMA), census agglomeration (CA), and metropolitan influenced zone (MIZ) definitions.¹⁵

The MIZ approach defines CMAs (population of at least 100 000) and CAs (population of at least 10 000) as urban and all other areas as rural. These rural areas are then subdivided by MIZs on the basis of proportions of rural residents who commute to work in urban centres.¹⁵ There is no universally accepted definition of *rural* in Canada, but at present many (rural) health researchers¹⁵⁻¹⁸ use the MIZ definitions, providing a standard method for defining *rural* and subdividing rural areas; also, the geographic units can be linked to sociodemographic census information and many other Statistics Canada databases when needed. We grouped CMAs with CAs, and all other MIZ categories, to create a variable of dichotomous nature (ie, urban-rural).

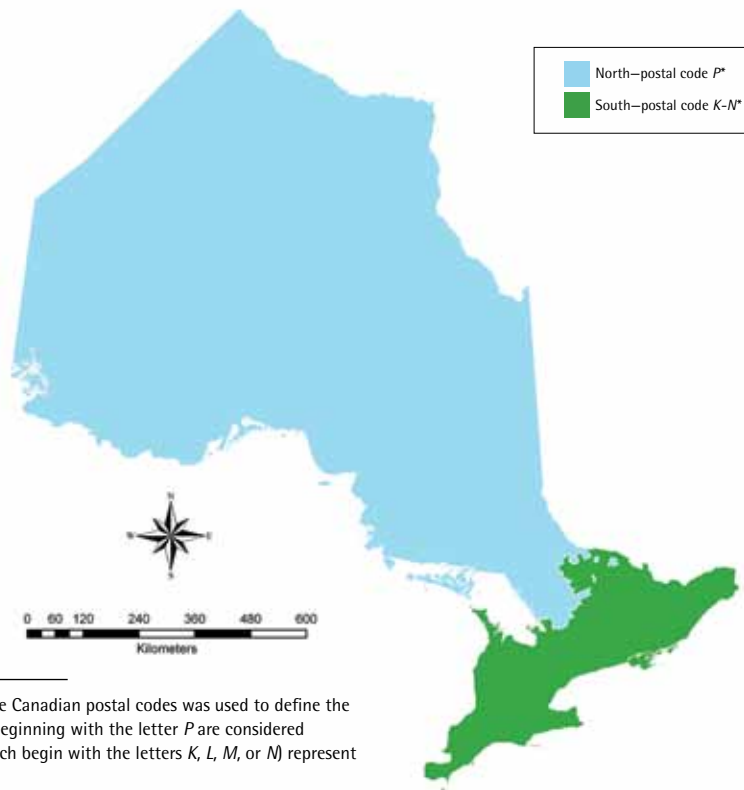
Geographic location categorization. Similarly, there is no universally accepted boundary dividing northern and southern parts of the province. The forward sortation area (FSA) of the Canadian postal codes was used to define the north. Based on this distinction, FSAs beginning with the letter *P* are considered northern while all remaining FSAs (which begin with the letters *K, L, M, or N*) represent southern Ontario. Geographically speaking, this divide stretches from the base of Georgian Bay (roughly 45° of latitude) and runs at a 45° angle toward the Quebec border (Figure 1¹⁹). This categorization has been used by others,²⁰ and while not exact, it also closely resembles the delineation between the northern and southern Local Health Integration Networks,²¹ which is the delineation used by the Government of Ontario and applied in the Rural and Northern Health Framework.²²

Data analysis

The data set represents the population of all physicians with primary practices in Ontario, making the use of inferential statistics unnecessary. Data were used to examine the distribution of physician numbers by their competency in the French language and their geographic location. Data are first presented for all physicians and then separated for GPs and FPs and for other specialists. Provincial population data were used for comparative purposes and to generate ratios of number of patients per physician.

RESULTS

Among the 22 688 Ontario-based physicians, 3589 (15.8%) identified French as a language of competence, while 19 099 (84.2%) did not. Population data analysis revealed that 496 815 (4.1%) of Ontario residents identified French as their only first official language spoken, and 11 521 530 (95.9%) identified that English, English and French, or neither English nor French were their first official languages spoken. In general, the physician-to-patient ratio for Ontario was 1 physician to 530 patients. When the data were segregated by geographic locations, the physician-to-patient ratios were 1:601 for northern Ontario; 1:525 for southern Ontario; 1:1176 for rural areas; and 1:493 for urban areas (Table 1). Specific to the purpose of our study, the physician-to-patient ratio in Ontario by first official language spoken is 1 physician to 138 Francophone patients. Further, when divided by scope of practice, the GP and FP ratio for Francophone patients was 1 GP or FP for every 297 Francophone patients. When the ratio for other specialists to Francophone patients was examined in isolation, there was 1 other specialist for every 259 Francophone patients (Table 2).

Figure 1. Map of Ontario divided into north and south regions, based on postal code geography

*The forward sortation area (FSA) of the Canadian postal codes was used to define the north. Based on this distinction, FSAs beginning with the letter *P* are considered northern while all remaining FSAs (which begin with the letters *K*, *L*, *M*, or *N*) represent southern Ontario.

Adapted from Statistics Canada.¹⁹

Table 1. Prevalence of physicians in Ontario: *No. of possible patients per physician.*

REGION	POPULATION	NO. OF PHYSICIANS (PHYSICIAN-TO-PATIENT RATIO)		
		ALL PHYSICIANS	GPs AND FPs	OTHER SPECIALISTS
All Ontario	12 018 345	22 688 (1:530)	10 968 (1:1096)	11 720 (1:1025)
Northern Ontario	821 595	1366 (1:601)	850 (1:967)	516 (1:1592)
Southern Ontario	11 196 750	21 322 (1:525)	10 118 (1:1107)	11 204 (1:999)
Rural Ontario	1 422 210	1209 (1:1176)	1048 (1:1357)	161 (1:8834)
Urban Ontario	10 596 135	21 479 (1:493)	9920 (1:1068)	11 559 (1:917)

Table 2. Prevalence of French-speaking physicians in Ontario: *No. of possible Francophone patients per French-speaking physician.*

REGION	FRANCOPHONE POPULATION	NO. OF FRENCH-SPEAKING PHYSICIANS (FRENCH-SPEAKING PHYSICIAN-TO-FRANCOPHONE PATIENT RATIO)		
		ALL PHYSICIANS	GPs AND FPs	OTHER SPECIALISTS
All Ontario	496 815	3589 (1:138)	1674 (1:297)	1915 (1:259)
Northern Ontario	131 790	310 (1:425)	204 (1:646)	106 (1:1243)
Southern Ontario	365 025	3279 (1:111)	1470 (1:248)	1809 (1:202)
Rural Ontario	101 695	217 (1:469)	190 (1:535)	27 (1:3766)
Urban Ontario	395 120	3372 (1:117)	1484 (1:266)	1888 (1:209)

Geographic distribution of French-speaking physicians

Northern and southern Ontario. Table 2 presents data for northern and southern Ontario separately. When the distribution of physicians by their language of competence is considered, most French-speaking physicians are located in southern Ontario (91.4%), at a ratio of 1 physician for every 111 Francophone patients. In northern Ontario, the French-speaking physician-to-Francophone patient ratio was 1:425. When the French-speaking physician-to-Francophone patient ratios were examined for GPs and FPs and for other specialists in isolation, the ratios in southern Ontario were 1:248 for GPs and FPs, and 1:202 for other specialists, compared with ratios in northern Ontario of 1:646 for GPs and FPs, and 1:1243 for other specialists.

Urban and rural areas. Table 2 also presents data for urban and rural Ontario separately. When the distribution of physicians by their language of competence is considered, most French-speaking physicians are located in urban areas of Ontario (94.0%), at a ratio of 1 physician per 117 Francophone patients. The physician-to-patient ratio for rural Francophone patients was 1:469. When the French-speaking physician-to-Francophone patient ratios were examined for GPs and FPs and for other specialists in isolation, the ratios in urban Ontario were 1:266 for GPs and FPs, and 1:209 for other specialists, compared with ratios in rural Ontario of 1:535 for GPs and FPs, and 1:3766 for other specialists.

Rural and urban locations in northern and southern Ontario. Table 3 presents data for rural and urban locations in northern and southern Ontario. Most French-speaking physicians are located in urban areas of southern Ontario (87.9%), at a ratio of 1 physician for every 100 Francophone patients. When the French-speaking physician-to-Francophone patient ratios in urban southern Ontario were examined for GPs and FPs and for other specialists in isolation, the ratios were 1:231 for GPs and FPs, and 1:175 for other specialists. French-speaking physician-to-Francophone patient

ratios in northern Ontario in both rural and urban areas were quite similar to ratios found in rural southern Ontario (eg, urban northern Ontario, 1:646 for GPs and FPs; rural northern Ontario, 1:646 for GPs and FPs; rural southern Ontario, 1:456 for GPs and FPs).

DISCUSSION

To our knowledge, this is the first attempt to quantify the prevalence and distribution of French-speaking primary care providers in Ontario. Identifying health human resource needs is imperative to ensuring the delivery of high-quality and equitable health services across the province. Several interesting findings have emerged as a result of our analysis, and these merit further discussion. Clearly, there is a promising number of physicians, relative to the amount of French-speaking residents in Ontario, who identified that they were competent to offer French-language services when ratios are compared with those of the general population. Furthermore, the geographic disparities found among the Francophone sample are relatively consistent with those identified among all residents. Thus, while there is a reasonable number of physicians who indicated a self-assessed competency to deliver health services in French, it is the geographic maldistribution of such services that is of concern. However, several limitations and unanswered questions should be outlined before drawing a firm conclusion from these data.

Our analysis suggests that Francophone patients in Ontario fare relatively well in the area of “access to French-language physician services.” When compared with other health professions, there are twice as many physicians who claim to be able to offer services in French. Health Force Ontario examined the characteristics of 20 regulated health professions and found that 8% of active professionals were able to provide professional services in French,²³ while our analysis suggests that 16% of physicians in Ontario identify French as a language of competency. Furthermore, the physician-to-patient ratio for Ontario was 1 physician to every 530 patients, nearly 5 times greater than the ratio specific to Francophone

Table 3. Prevalence of French-speaking physicians in northern and southern Ontario, by rural and urban areas: No. of Francophone patients per French-speaking physician.

REGION AND AREA	FRANCOPHONE POPULATION	NO. OF FRENCH-SPEAKING PHYSICIANS (FRENCH-SPEAKING PHYSICIAN-TO-FRANCOPHONE PATIENT RATIO)		
		ALL PHYSICIANS	GPs AND FPs	SPECIALISTS
Northern Ontario				
• Rural	51 025	91 (1:561)	79 (1:646)	12 (1:4252)
• Urban	80 765	219 (1:369)	125 (1:646)	94 (1:859)
Southern Ontario				
• Rural	50 670	126 (1:402)	111 (1:456)	15 (1:3378)
• Urban	314 355	3153 (1:100)	1359 (1:231)	1794 (1:175)

patients (1:138). When the data were segregated by geographic location, the physician-to-patient ratios for Francophone patients were again smaller than those for the general population; 1:425 compared with 1:601 in northern Ontario, for Francophone patients and the general population, respectively; 1:111 compared with 1:525 in southern Ontario; 1:469 compared with 1:1176 for rural Ontario; and 1:117 compared with 1:493 for urban Ontario. However, we recommend considering the following limitations when interpreting our findings.

Limitations

Three points should be considered when interpreting our findings. First, researchers have cautioned against the use of straight “head counts” to represent supply of services.²⁴ Doing so does not consider whether physicians are taking on new patients, the amount of hours they work per week, or the scope of services they offer. Further, and more important, physician-to-patient ratios do not appropriately represent the “need” for health services in relation to the number of available physicians. In Ontario, Francophone people, those from the northern region, and rural dwellers are not as healthy as other Ontarians; thus, ratios cannot be compared on an even scale to their healthier counterparts. Therefore, the methodology applied in this study is limited by the lack of consideration for comorbidities, specifically our inability to account for patients’ current health status.

Second, the definition used to identify the Francophone population in this study deliberately isolates people who are classified as “French only” according to the variable of first official language spoken, as opposed to also including those classified as “English and French.” Most demographic and population health reports include individuals who respond that French is “among” their first official languages spoken.^{3,4} We excluded such respondents and isolated those who responded that French was their “only” first official language spoken with the intention of representing those who are more likely to seek French-language health services. As a result, the prevalence of Francophone people in Ontario in our study was reduced by approximately 15% (n=85 875) when compared with what is reported by the Office of Francophone Affairs.² In defining the Francophone population as we did, we might have excluded respondents classified as “English and French” who would prefer to receive health services in French. However, it is also plausible that respondents classified as “French only” would not prefer to receive services in their mother tongue. Thus, we have made the assumption that those who are classified as “French only” according to the variable of first official language spoken should receive physician services in French.

Third, the definition of *French-speaking physicians* also comes with a series of assumptions. The question

posed in the CPSO Annual Membership Renewal Survey is a subjective personal assessment of competency; thus, the actual number of physicians who can or do offer high-quality health services in French might be inaccurate. Physicians might not have self-assessed an adequate competency to offer health services in French when, in fact, they could have communicated effectively with a Francophone patient. However, it is also possible that English-speaking physicians think they are competent to offer services in the French language when needed, but do not publicly advertise their ability to do so. It would be preferable to implement a standardized examination of the physician’s competency to practise in the identified language or at the very least expand this question to ask to what extent he or she currently practises in French.

Conclusion

Despite such limitations, clearly opportunities to receive health services in the French language appear to be encouraging. We recommend that Francophone people wanting to receive services in their mother tongue request it, as there certainly appears to be an availability of services in French. However, the maldistribution of such services is likely the cause of perceptions of inadequate availability of services in French across the province. We can conclude that inadequacy related to French-language services does not appear to be an issue of abundance but more an issue of having the right services in the right areas. Our analysis revealed a substantial disparity when comparing the southern to the northern regions of Ontario. The smallest physician-to-patient ratios were all found in southern Ontario. More important, the ratios in northern Ontario, both urban and rural, resemble those of rural areas in southern Ontario. This geographic maldistribution is not unique to Francophone people. For instance, Wenghofer et al recently reported that a much greater proportion of physicians are located in Ontario’s southern regions and urban communities,²⁰ while Tepper and colleagues found that the physician supply in large northern centres resembled that of rural communities in southern Ontario.²⁵ We should also bring attention to the fact that the ratios of other specialists to the number of patients are gravely unbalanced when comparing rural-northern communities to urban-southern communities.

Moving forward, it is necessary to continue to reveal health human resources needs, opportunities, and shortfalls in the province of Ontario. In doing so, we can embrace the diversity of our population and continue to strive for improved health outcomes. Training physicians with diverse sociolinguistic competencies is imperative. However, given the many reports that have found that the issues related to health human resources in Ontario relate not to a supply shortage but to the

maldistribution of supply, we recommend taking a closer look at methods of attracting French-speaking physicians to areas for which there is the greatest demand for front-line services in French. In doing so, steps can be taken to ameliorate the health of Francophone people in Ontario so that they can continue to prosper as one of the many communities that defines diversity in this province. Furthermore, this paper speaks to the importance of considering a broader range of health determinants. As mentioned earlier, much of the attention to health disparities identified among sociolinguistic groups in Ontario has been given to shortfalls in health services provision. However, given the findings from this paper, we also recommended broadening the scope of research to include other elements such as examining preventive health behaviour.

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Contributors

Dr Gauthier conceptualized the study, assisted with data analysis, and wrote the manuscript. **Mr Timony** conceptualized the study, conducted data analysis, and reviewed the manuscript. **Dr Wenghofer** conceptualized the study, assisted with data analysis, and reviewed the manuscript.

Competing interests

None declared

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References

1. Office of Francophone Affairs. *Profile of Ontario's Francophone community*. 2009. Toronto, ON: Office of Francophone Affairs; 2009. Available from: www.ontario.ca/en/communities/francophones/profile/index.htm. Accessed 2011 Aug 7.
2. Office of Francophone Affairs [website]. *Statistical profiles (1999, 2005 and 2009)*. Toronto, ON: Office of Francophone Affairs; 2011. Available from: www.ofa.gov.on.ca/en/franco-stats.html. Accessed 2012 Nov 5.
3. Picard L, Allaire G. *Second report on the health of Francophones in Ontario*. Sudbury, ON: Public Health Research, Education and Development Program; 2005. Available from: www.opha.on.ca/resources/docs/HealthofFrancophones-EN.pdf. Accessed 2012 Nov 5.
4. Bouchard L, Roy JF, Lemyre L, Gilbert A. *The health of Francophone minorities in Ontario: secondary analysis of the national population health survey*. Ottawa, ON: University of Ottawa; 2002.
5. French Language Health Services Working Group. *Health care services for Franco-Ontarians: a roadmap to better accessibility and accountability*. Ottawa, ON: Ministry of Health and Long-Term Care; 2005.
6. Fédération des Communautés Francophones et Acadienne du Canada. *Improving access to French-language health services*. Ottawa, ON: Fédération des Communautés Francophones et Acadienne du Canada; 2001.
7. Office of the French Language Services Commissioner. *Special report on French language health services planning in Ontario*. Toronto, ON: Queen's Printer for Ontario; 2009.

8. Consultative Committee for French-Speaking Minority Communities. *Towards a new leadership for the improvement of health services in French*. Ottawa, ON: Health Canada; 2007.
9. Bowen S. *Language barriers in access to health care*. Ottawa, ON: Health Canada; 2001.
10. Office of Francophone Affairs [website]. *The French Language Services Act: an overview*. Toronto, ON: Office of Francophone Affairs; 2011. Available from: www.ofa.gov.on.ca/en/flsa.html. Accessed 2011 Aug 7.
11. Gagnon-Arpin I, Bouchard L. *Les Services de Santé en Français en Ontario: offre, demande, utilisation*. Ottawa, ON: Réseau de recherche appliquée sur la santé des francophones de l'Ontario; 2011. Available from: www.rrasfo.ca/recherche/publications/Rapport%20EVMLO%20Ontario-final2.pdf. Accessed 2011 Oct 5.
12. Canadian Institute for Health Information. *Supply, distribution, and migration of Canadian physicians*. Ottawa, ON: Canadian Institute for Health Information; 2010.
13. Forgue E, Landry R, Boudreau J. *Qui sont les francophones? Analyse de définitions selon les variables du recensement*. Ottawa, ON: Consortium national de formation en santé Secrétariat national; 2009.
14. Statistics Canada [website]. *First official language spoken of person*. Ottawa, ON: Statistics Canada; 2012. Available from: www.statcan.gc.ca/concepts/definitions/language-langue05-eng.htm. Accessed 2012 Feb 5.
15. DesMeules M, Pong R, Lagace C, Heng D, Manuel D, Pitblado R, et al. *How healthy are rural Canadians? An assessment of their health status and health determinants*. Ottawa, ON: Canadian Institute for Health Information; 2006.
16. Pampalon R, Martinez J, Hamel D. Does living in rural areas make a difference for health in Québec? *Health Place* 2006;12(4):421-35. Epub 2005 Jun 13.
17. Pong RW, DesMeules M, Lagacé C. Rural-urban disparities in health: how does Canada fare and how does Canada compare with Australia? *Aust J Rural Health* 2009;17(1):58-64.
18. Hogenbirk JC, Pong RW, Lemieux SK. Impact of telephone triage on medical service use: implications for rural and remote areas. *J Agric Saf Health* 2005;11(2):229-37.
19. Statistics Canada. *Census forward sortation area boundary file*. Catalogue no. 92-170-XWE. Ottawa, ON: Statistics Canada; 2007. Available from: http://geodepot.statcan.040120011618150421032019/02152114040118250609120519/061901-182001_05-eng.jsp. Accessed 2012 Nov 9.
20. Wenghofer EF, Timony PE, Pong PW. A closer look at Ontario's northern and southern rural physician demographics. *Rural Remote Health* 2011;11(2):1591. Epub 2011 Mar 15.
21. Ministry of Health and Long-Term Care [website]. *Local health integration networks, 2006*. Ottawa, ON: Ministry of Health and Long-Term Care; 2012. Available from: www.health.gov.on.ca/en/public/programs/flhs/ahsia.aspx. Accessed 2012 Feb 5.
22. Ministry of Health and Long-Term Care. *Rural and northern health care framework/plan*. Ottawa, ON: Ministry of Health and Long-Term Care; 2010. Available from: http://health.gov.on.ca/en/public/programs/ruralnorthern/docs/report_rural_northern_EN.pdf. Accessed 2012 Feb 5.
23. Ontario Health Human Resources Research Network [website]. *Putting evidence at the centre of health human resources planning*. Ottawa, ON: Ministry of Health and Long-Term Care; 2009. Available from: www.ror-rhs-ohhrm.ca/index.php?option=com_content&view=article&id=25%3Aputting-evidence-at-the-centre-of-health-human-resources-planning&catid=10%3Alatest-news&Itemid=8&lang=en. Accessed 2011 Apr 6.
24. Verhulst L, Forrest CB, McFadden M. To count heads or to count services? Comparing population-to-physician methods with utilization-based methods for physician workforce planning: a case study in remote rural administrative region of British Columbia. *Health Policy* 2007;2(4):e178-92.
25. Tepper J, Schultz SE, Rothwell DM, Chan BT. *Physician services in rural and northern Ontario*. Toronto, ON: Institute for Clinical Evaluative Sciences; 2005.
