Geographic Distribution of Physicians in Canada: Beyond How Many and Where

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Table of Contents

Geographic Distribution of Physicians in Canada:
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Appendices

Acknowledgements

Authors' Notes

In 1999, we prepared a Health Canada–commissioned study titled *Geographic Distribution of Physicians in Canada*.[1] As far as we are aware, this remains the only publication that provides an analysis of the sub-provincial and sub-territorial characteristics and geographic distribution of Canada's physicians, from a national perspective. This publication was based on data from 1996 or earlier. We are grateful to the Canadian Institute for Health Information (CIHI) for giving us the opportunity to update and expand our analysis.

The present work could not have been prepared and published without the support of a number of staff members of the Health Human Resources department at CIHI. Help was also provided by the Health Expenditures department. We gratefully acknowledge their assistance.

This report was designed to provide what we feel is an objective overview and description of some of the geographies of Canada's physician workforce. We hope that it will be helpful to policy-makers, planners and researchers who are interested in issues concerning health human resources, particularly the medical workforce. Specific policy-related recommendations were not intended to be part of the report, though readers may construe some statements as being policy-oriented. Such statements are solely the responsibility of the authors and may not reflect the views of CIHI or of those who reviewed the report.

Raymond W. Pong, PhD
J. Roger Pitblado, PhD

Foreword

The Canadian Institute for Health Information (CIHI) is one of Canada's leading sources of quality, reliable and timely health information. More and more, Canadians are turning to CIHI for information they can trust. CIHI is a not-for-profit, pan-Canadian organization governed by a strong and active 16-member board of directors whose membership strikes a balance among the health sectors and regions of Canada.

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Executive Summary

Health care is a labour-intensive industry, and the health workforce is the foundation of the health care system. Geographic maldistribution of health care providers has been identified as one of the major challenges facing the health workforce. Maldistribution refers to the mismatch between the spatial distribution of inhabitants and that of health care providers. Although this may be an endemic problem affecting many types of health care workers, it is the maldistribution of physicians that has captured the attention of the public, the mass media, policy-makers, health care administrators and researchers.

In 1999, a study titled *Geographic Distribution of Physicians in Canada* was published, which documented how physicians were distributed in Canada, using data mostly from the mid-1990s.[1] But the nature and extent of distribution imbalances, and possibly the public's perception of them, are changing—and so is our understanding of what constitutes distribution imbalances. The present study, using the most up-to-date data available, represents an update and extension of the 1999 publication.

In the past, studies of geographic distribution of physicians have focused almost exclusively on counting the number of physicians in each community, county, region, province/state or country. But this head-count approach is increasingly seen as inadequate because, in the final analysis, the provision of medical care, not just the number of physicians, may be more relevant to meeting health care needs. Thus, there is a need to go beyond "how many" and "where." As a result, the notion of full-time equivalent (FTE) has been introduced. FTE is used as a standardized unit of human resources measurement when variations in the provision of medical services are taken into consideration.

As well, there is growing evidence that the practice patterns of physicians, especially family physicians, are changing. The vast majority of rural physicians are family physicians. In the past, they have provided a broad array of medical services, because accessing specialist care in rural areas is often difficult or impractical. But a growing number of family physicians have narrowed the range of medical services they offer. When family physicians in rural areas reduce their scope of practice,[†] there is a potential loss of some locally available medical services. Thus, in order to fully understand the geographic distribution of physicians, one has to take into consideration not just the number of medical practitioners and where they are located, but also how much they do and what they do.

Three sources of data were used in this study. The Southam Medical Database provided the number of active physicians in Canada in 2004. This is the primary source of data used to describe the geographical distribution of physicians. Data from the National Physician Database, as of March 2005, were used to generate the number of FTE physicians in 2002. Lastly, the 2004 National Physician Survey was used to examine the differences between rural family physicians and their urban counterparts with respect to practice characteristics.

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† The term "scope of practice," as used in this report, refers to the range of services physicians offer to their patients. It does not refer to the legal definition of what physicians are authorized to perform.

In this study, urban–rural differences are reported by equating urban with census metropolitan areas and census agglomerations and by equating rural with "rural and small town Canada" as used by Statistics Canada. Urban communities are subdivided into finer categories based on population size. Rural and small towns are classified into metropolitan influence zone (MIZ) categories, depending on the percentage of residents who commute to work in urban centres. The hierarchical urban–rural categories employed in this study are as follows (with some examples associated with each category):

Urban Communities

- 1,000,000 and more inhabitants (Montréal, Que.; Toronto, Ont.; Vancouver, B.C.)

- 500,000 to 999,999 inhabitants (Calgary, Alta.; Quebec City, Que.; Winnipeg, Man.)

- 100,000 to 499,999 inhabitants (Halifax, N.S.; London, Ont.; Victoria, B.C.)

- 50,000 to 99,999 inhabitants (Charlottetown, P.E.I.; Fredericton, N.B.; Kamloops, B.C.)

- 25,000 to 49,999 inhabitants (Moose Jaw, Sask.; Rimouski, Que.; Truro, N.S.)

- 10,000 to 24,999 inhabitants (Estevan, Sask.; Grand Falls–Windsor, N.L.; Yellowknife, N.W.T.)

Rural Communities

- Strong MIZ (Conception Harbour, N.L.; Escuminac, Que.; Stirling, Alta.)

- Moderate MIZ (Cardigan, P.E.I.; Gananoque, Ont.; Kimberley, B.C.)

- Weak MIZ (Chance Cove, N.L.; Lunenburg, N.S.; Pinawa, Man.)

- No MIZ (Grand Manan, N.B.; Miminegash, P.E.I.; Minton, Sask.)

- Territories, excluding Whitehorse and Yellowknife (Iqaluit, Nun.; Norman Wells, N.W.T.; Watson Lake, Y.T.)

This 11-geographic-category classification was reduced to 6 categories when data from the 2004 National Physician Survey were analyzed in Chapter 4, due to the smaller numbers of survey respondents, particularly in rural areas.

The following highlight the major findings of this report:

Mapping Canada's Physicians

- Although physician shortages may be experienced in any geographic setting, urban or rural, Canadian physicians are concentrated in urban areas, particularly specialist physicians. Just under 16% of family physicians (in this study, the term "family physicians" includes general practitioners) and 2.4% of specialists were located in rural and small-town Canada, where 21.1% of the population resided in 2004.

- In 2004, 9.4% of all physicians were located in rural areas, compared with 21.1% of Canadians. These figures differ little from the 1996 figures of 9.8% and 22.2%, respectively. In other words, the situation at the national level has not changed markedly during the eight-year period.

- The disproportionate relationship between the geographic distribution of Canada's population and its physicians is summarized by Gini coefficients. The Gini coefficient (designated as "G") can range in value from 0 to 1. In the context of this report, a Gini coefficient of zero would represent a perfectly equal proportional distribution of physicians and general population. Comparing the distribution of all physicians to that of the general population across census divisions results in a Gini coefficient of G = 0.25.

- The proportional distribution of family physicians across census divisions bears greater resemblance to that of the general population (G = 0.15). However, there is greater discordance between where people live and where physicians practise when specialties like emergency medicine (G = 0.58), psychiatry (G = 0.46), orthopedic surgery (G = 0.37) and obstetrics and gynecology (G = 0.36) are examined.

- Mapping results show that residents of some rural communities can be more than 100 kilometres (or several hundred kilometres, for the territories) away from the nearest specialist physician, including obstetricians, pediatricians and general surgeons.

Sex Distribution

- In urban settings, 67.8% of physicians are male and 32.2% of physicians are female. In rural settings, 69.7% of physicians are male and 30.3% are female.

- In urban areas, only 44.0% of male physicians are in family or general practice, compared with 55.9% of female physicians. In rural areas, 85.8% of male physicians and 91.3% of female physicians are in family or general practice.

Age Distribution

- For urban physicians, the average age decreases as urban communities get smaller. This trend is particularly evident for female physicians, as their average age in the largest urban centres is 45.0 years, decreasing to 42.0 years in the smallest centres. Similarly, in rural areas, the average age decreases along with decreasing metropolitan influence. For example, the average age of male physicians in strong metropolitan influence zone (MIZ) communities is 52.2 years, compared with an average age of 47.8 years in no MIZ communities.

Language Composition

- French is the predominant language (83.0%) for physicians in Quebec. However, simple provincial/territorial analysis may hide sub-provincial/territorial variations. The high percentage of French-speaking physicians in communities with a population of 25,000 to 49,999 inhabitants (40.7%) and in no MIZ communities (44.9%) may reflect concentrations of francophone populations and physicians in such regions as northern Ontario and rural Manitoba.

International Medical Graduates

- Nationally, the percentage of international medical graduates (IMGs) within the Canadian medical workforce continued to decline somewhat over the last few years, from 23.1% in 2000, to 22.6% in 2003, to 22.3% in 2004. In 2004, IMGs accounted for 26.3% of all physicians in rural Canada, compared with 21.9% in urban areas. Also, IMGs accounted for 26.9% of family physicians in rural areas, compared with 22.6% in urban areas. In other words, there is a heavier reliance on foreign-trained physicians in rural Canada.

Revising Physician Counts: Full-Time Equivalents

Physicians may choose to work full-time or part-time. Recognizing these variations, this study examines the supply of full-time equivalent (FTE) physicians. Unlike physician head counts, FTE statistics count individual physicians as less than, equal to or greater than one physician, depending on their workload.

- In 2002, the average FTE value for fee-for-service (FFS) physicians was equal to 0.83. For female and male physicians, the average FTE was 0.69 and 0.89, respectively.

- With respect to age groups, in 2002, average FTE ranged from 0.63 for physicians less than 35 years to 0.94 for physicians aged 55 to 59. Among male physicians, average FTE is highest (0.98) in the 45-to-49, 50-to-54 and 55-to-59 age groups. For females, average FTE is highest (0.79) in the 55-to-59 age group.

- Ophthalmologists generate the highest average FTE (0.91) in 2002. FTE values were comparatively lower for neurosurgeons (0.78), pediatricians (0.80), orthopedic surgeons (0.81), general surgeons (0.81) and family physicians (0.81).

- Using physician FTE values, this study shows that, while there were 53,148 physicians receiving FFS payments in 2002, there were only 44,150 FTE physicians in Canada—representing an overall reduction of 16.9% in the "actual" number of FFS physicians in Canada.

Practice Characteristics of Urban and Rural Family Physicians

- Family physicians in urban and rural areas tend to have different practice characteristics. More specifically, rural family physicians are more likely to have a broader scope of practice and perform a broader range of clinical procedures. These findings are consistent with results based on other national surveys of Canadian family physicians and with results from other studies based on secondary administrative data.

- The results of this study suggest that, by maintaining a broader scope of practice and providing a broader range of clinical services, rural family physicians may fill a service gap that stems from a relative under-supply of specialist physicians in rural and remote regions of the country.

- Although rural family physicians tend to have a broader scope of practice than their urban counterparts, several studies based on secondary administrative data have shown that comprehensiveness of practice by Canadian family physicians has been declining in the last decade or so. Using self-reported data on changes in practice patterns in the recent past and intended future changes, this study confirms that family physicians, in both rural and urban areas, are more likely to reduce than to expand their scope of practice. The workforce and service implications of these trends, particularly for rural Canada, deserve close attention.

1. Introduction

1.1 Background

Health care is a labour-intensive industry making health human resources the foundation of the health care system. Without health care providers such as doctors, nurses, pharmacists, laboratory technologists, health record administrators and home care aides, there would be no health care. According to most estimates, at least 70% of health care cost is related to personnel cost such as wages, benefits and fee-for-service remuneration. For this reason, many health care commissions and task forces, such as the Commission on the Future of Health Care in Canada; the Standing Senate Committee on Social Affairs, Science and Technology; and the Health Council of Canada, have recently urged federal, provincial and territorial governments to pay special attention to health human resources issues. Internationally, as a way of drawing attention to the importance of health workforce issues, the World Health Organization (WHO) has decided to declare 2006 to 2015 "The Decade of Human Resources for Health."

According to the WHO, imbalances in health human resources exist in a health care system when the composition, level and/or use of health care providers do not lead to optimal health-system goals.[2] Zurn et al. have identified five types of imbalances: profession/specialty imbalances, geographic imbalances, institutional and services imbalances, public/private imbalances and gender imbalances.[3] Commenting on the health workforce, Ray has identified uneven geographic distribution of health care providers as the first of four "distributional imbalances," the others being occupational imbalance, imbalance among specialties and institutional imbalances.[4]

The term "geographic distribution imbalances," commonly referred to as "maldistribution," means the mismatch between the spatial distribution of inhabitants and that of health care providers. Although this may be an endemic problem affecting many types of health care providers, it is the maldistribution of physicians that has captured the attention of the public, mass media, policy-makers, health care administrators and researchers. As well, while geographic maldistribution of physicians exists in many nations—developed and developing, rich and not so rich—the implications may be more significant in countries with a large territory, widely dispersed population and uneven regional economic development, like Australia, Brazil, Canada, China and the United States.

Canada has a universal health care system, and accessibility is one of the five principles of the *Canada Health Act*. Generally speaking, this principle is meant to ensure that economic means is not a barrier to accessing medically necessary care, particularly in the context of a nation as vast and, in places, as sparsely populated as Canada. Commenting on disparities in access to health care, the Commission on the Future of Health Care in Canada noted that ". . . some would say that there is an 'inverse care law' in operation. People in rural communities have poorer health status and greater needs for primary health care, yet they are not as well served and have more difficulty accessing health care services than people in urban centres."[5] Thus, access issues are relevant to health care planning in Canada.

A study published in 1999 documented the geographic distribution of physicians and highlighted issues around physician maldistribution in Canada.[1] But the nature and the extent of distribution imbalances, as well as the public's perceptions of them, are changing, and so is our understanding of what constitutes distribution imbalances. The changing age and sex structure of the medical workforce, with its potential impact on the delivery of health care services, demands ongoing attention. Equally important are factors such as the declining interest by new medical graduates in becoming family physicians, changing patterns of medical practice and various policy initiatives designed to recruit and retain rural physicians.

At the same time, research on the geographic distribution of physicians has become more sophisticated in the sense that it is now generally realized that the crux of the matter is not just the number of physicians and where they are located. There are other factors that can aggravate or ameliorate the situation. Thus, a study of geographic distribution of physicians needs to go beyond "how many" and "where." In addition to asking what the physician-to-population ratio is, people now ask many more questions, such as: What is an appropriate physician-to-population ratio and is this ratio achieved in urban as well as rural areas? What do physicians do? How many patients do they see? How can physicians be retained after they have been recruited to a rural community? What are the health care needs of the population in the area? What is the relationship between physician supply and the health status of the population? The present study will try to answer some, though not all, of these questions. In this sense, it represents an update and extension of the work done in 1999 in the report titled *Geographic Distribution of Physicians In Canada*.[‡]

1.2   Beyond Head Counts

In the past, studies of geographic distribution have focused almost exclusively on counting the number of physicians in each community, county, region, province/state or country. This approach is still very much in vogue, judging by the ubiquity of the physician-to-population ratio or the population-per-physician ratio in health services research and planning literature. But this head-count approach is increasingly seen as inadequate. Although still widely used and still useful, physician-to-population ratios based on head counts should serve as the point of departure for discussing workforce distribution and the adequacy of personnel supply.

Some researchers and health care planners have moved beyond the simple head-count approach because they have come to the realization that the provision of medical care is not uniformly distributed among all physicians. Some physicians choose to work longer hours than others and some see more patients than others in the same amount of time. As a result, the notion of full-time equivalent (FTE) has been introduced to deal with individual variations in the quantity of clinical services produced. This is becoming more important as the medical workforce ages and as the number of female physicians grows. It is known that physicians nearing retirement tend to reduce their workload and that

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[‡] The present study does not include a review of the literature on physician distribution issues. This is because a systematic review and synthesis of the literature was conducted by Pitblado and Pong.[1] This work also led to two other publications.[6, 7] Those interested in a more detailed discussion of the conceptual and methodological issues pertaining to physician distribution are encouraged to consult the referenced publications.

female physicians, who represent a larger proportion among younger age groups, tend to work fewer hours per day and fewer days per year than their male counterparts, possibly due to child-bearing and child-rearing responsibilities.[8] "FTE" is used as a standardized unit of human resources measurement when variations in the provision of medical services are taken into consideration.

As well, there is growing evidence that the practice patterns of physicians, especially family physicians, are changing. More and more family physicians are moving away from providing a broad range of medical services or performing some clinical procedures that have traditionally been part of a family physician's scope of practice. Although the reasons for this practice trend are still largely unknown, the implications for rural and small town Canada may be particularly significant.

The vast majority of physicians in rural areas are family physicians. In the past, they have provided a broad range of services, because referral to specialists or accessing specialist care is often impractical. If family physicians in rural areas reduce their range of activities or scope of practice, there is a potential loss of some locally available medical services, even if there are the same number of medical practitioners, and even if they work the same amount of time. While other providers may be available to fill the resulting service gaps in larger urban centres, such alternatives are less available in rural communities and remote regions. Thus, in order to fully understand the geographic distribution of physicians, we must take into consideration not just the number of medical practitioners and where they are located, but also how much they do and what they do.

1.3   Objectives of the Study and Structure of the Report

The purpose of this study is to examine how physicians are distributed in Canada, using the latest available data from several sources. The spatial distribution of physicians is described in some detail. But the study seeks to go beyond presenting data on the distribution of physicians relative to the distribution of the Canadian population. It will describe how physicians in communities of different sizes differ with respect to several demographic characteristics. As well, it will discuss how much they do and what they do, and whether there are urban–rural differences.

The remainder of the report is divided into four chapters. Chapter 2 describes the sources of data that will be analyzed in the chapters that follow and the methodologies that will be used in the analysis. Chapter 3 discusses the geographic distribution of physicians with respect to head counts and FTE-adjusted counts. In addition, it examines urban–rural differences, if any, with respect to some salient demographic characteristics, such as age, sex and language. Chapter 4 focuses on the practice characteristics of family physicians in urban and rural settings. In particular, it documents urban–rural differences, if any, in the scope of practice of family physicians—and discusses why such differences may have important implications. The final chapter summarizes the major findings and points out some limitations of the present study.

Technical and methodological details and statistical tables are presented in the appendices. A list of the abbreviations used in the report is provided in Appendix A.

2.   Data and Methods

In this chapter, the sources and characteristics of the data used in the study are described. Also briefly discussed are the methods used to analyze the data. Further methodological details are provided in Appendix B.

2.1   Target Populations

All physicians, family physicians and specialists are included when the numbers and locations of physicians are presented and discussed. Similarly, full-time equivalent (FTE) data are presented for both family physicians and specialists. However, in relation to urban–rural differences in practice characteristics, the focus is on family physicians only. This is because the vast majority of physicians working in rural and small town Canada are family physicians. Another reason is the source of data used, which will be explained in detail later on.

Three physician databases are used in this study, each of which is administered or held by the Canadian Institute for Health Information (CIHI). The databases are as follows:

- **Southam Medical Database (SMDB, N = 60,612):** contains information for all active physicians in Canada in 2004, excluding residents and physicians not registered with any provincial or territorial licensing authority and who have indicated to the Business Information Group (BI Group) that they do not wish to have their information included in the *Canadian Medical Directory*.

- **National Physician Database (NPDB, N = 53,148):** contains information for all fee-for-service (FFS) physicians in Canada in 2002–2003.

- **2004 National Physician Survey (NPS, n = 11,041 family physicians):** contains information for Canadian family physicians who responded to the 2004 survey.

2.2   Southam Medical Database

The present study employs 2004 data from the Southam Medical Database (SMDB), which contains information on physicians located in all provinces and territories of Canada. SMDB information is collected by the BI Group, a division of Hollinger Canadian Newspaper Publications Company, in order to produce the *Canadian Medical Directory* and other commercial products. CIHI updates the SMDB through annual data files acquired from the BI Group.

The following lists only the elements that were used, and, where applicable, the categories of the elements that were used. More information, including a complete list of the SMDB elements, is available from the CIHI Web site (www.cihi.ca).

- **Medical activity code:** Study results are based on all "active" physicians. Physicians are defined as "active" if they have a medical doctorate (MD) degree and a valid address (that is, mail sent to the physician is not returned). Active physicians include those who are full- or part-time administrators, teachers, etc., and who may not engage in clinical practice. This methodology is consistent with those used by CIHI to produce annual reports on the number of active civilian physicians.

- **Physician type:** Values for this data element identify general practitioners and specialist physicians. The category "general practitioner" may be equated with the term "family medicine physician," which includes general practitioners (physicians without a current medical specialty certified in Canada) and family medicine and emergency family medicine physicians.

- **Current medical specialty:** The individual physician record of the SMDB allows for a maximum of four specialties to be coded. For "current medical specialty," if more than one specialty is listed, the specialist is tabulated under the most recently acquired certified specialty, on the assumption that it most accurately reflects the current field of practice. More details on this element as well as a listing of the major specialties and sub-specialties that are included can be found in Appendix C.

- **Graduating country indicator:** Canada, U.S., foreign or not stated. As is apparent from the valid responses listed (other than "not stated"), the "graduating country indicator" identifies whether or not a physician received his or her MD degree in Canada, the U.S. or another foreign country.

- **Age (CIHI-derived):** Through simple subtraction, age is derived from the physicians' birth year. For those physicians for whom date of birth was not available, age was calculated using year of MD graduation with age at MD graduation equal to 25 years.

- **Postal code:** Geographic information is based on the postal code of physicians' preferred mailing address. This information was used to assign each physician to a relatively large geographical unit in order to generate aggregate counts for reporting purposes. The various geographical units that have been employed are described in section 2.5.

- **Language:** French or English. This element indicates the physicians' preferred language for communication with the BI Group.

Physician counts include all active general practitioners, family practitioners and specialists. SMDB physician specialty classification is based on postgraduate certification credentials achieved in Canada. Physicians designated as family practitioners include physicians who were granted a Certification in Family Medicine by the College of Family Physicians of Canada or the Collège des médecins du Québec. Certificants of the College of Family Physicians of Canada are designated "CCFP" or "CCFP—Emergency Medicine." Specialists include certificants of the Royal College of Physicians and Surgeons of Canada and/or the Collège des médecins du Québec. All other physicians, including general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists, are included in the family practice counts.

It has been observed that the SMDB classification system produces counts that may differ from other publications in different jurisdictions. For example, a recent CIHI analytical bulletin reported that, in 2003, "an estimated 1.7% of Canadian physicians are non-certified specialists. The percentage varies across jurisdictions. For example, 13.7% of Newfoundland and Labrador's total physician workforce is comprised of non-certified specialists, compared to 0.4% of Ontario's total physician workforce."[9] As the information was made available only by Newfoundland and Labrador and Saskatchewan, additional analyses of the numbers of non-certified specialists for these provinces may be found in CIHI's report, *Supply, Distribution and Migration of Canadian Physicians, 2004*.[10]

Interruptions in the data supply chain for the Southam Medical Database can contribute to potential overcoverage, undercoverage and/or error within the database. In the context of this report, data for the year 2004 do not reflect annual physician information provided by the College of Physicians and Surgeons of British Columbia. As such, SMDB physician count information represents an underestimate of the number of physicians in British Columbia in 2004.[10]

2.3   National Physician Database

Although the SMDB is a valuable source of what may be termed "head-count" information, it does not provide information on the activity levels of physicians. The National Physician Database (NPDB), on the other hand, does so by including a measure of full-time equivalency. The NPDB contains detailed information on physicians' fee-for-service (FFS) billing claims by specific clinical services and payment amounts. This information is employed by CIHI to generate a derived variable, the "full-time equivalent," which can be regarded as a measure of physician workload. As well, the NPDB contains some descriptive characteristics for each FFS physician. Descriptions of the 2002−2003 NPDB physician characteristics that are used in this study are provided below.

- **General practitioner/specialist flag:** For this element, "general practitioner" can be equated with "family medicine physician," which includes residents, general practitioners (physicians without a current medical specialty), family medicine and emergency medicine physicians, as well as community medicine/public health physicians.

- **Specialty:** Provinces and territories are asked to provide two types of specialty information on the NPDB files—latest acquired certified specialty and payment plan specialty. In this report, the payment plan specialty is used, but provinces/territories may provide certified specialty information if they do not have the plan payment specialty information. Please see Appendix D for a list of medical specialties used in NPDB.

- **Sex:** male, female, not stated.

- **Age:** Age is given in terms of years. Unlike in the SMDB, if this element is missing in this database, a physician's age is not imputed.

- **Postal code of main activity:** This information is used to assign each physician to a relatively large geographical unit in order to generate aggregate counts for reporting purposes. The various geographical units that have been employed are described later on in this chapter. For Alberta physicians, postal code data were not available for this study. Instead, the NPDB records for these physicians identified their location by specific census metropolitan area (CMA), census agglomeration (CA) or other (that is, non-CMA/CA). Explanations of these terms are provided in section 2.5.

- **Full-time equivalent (FTE):** FTE values are calculated for all physicians within the NPDB and are used as a measure of relative workload. FTE values are calculated by comparing the total annual payments of individual physicians to defined FTE payment benchmarks.[11] Unique upper and lower FTE benchmarks are defined for each provincial medical specialty group. Physician FTE values, therefore, control for variations in average payments across medical specialty groups and across provincial medical service plan fee schedule prices. Physicians' individual FTE values are calculated using the following formula:

$$
FTE = \begin{cases}
B / B_{40} & \text{if the physician's total payments (B) are below the total payment value at the 40th percentile (B_{40}) for the physician's province-specific medical specialty group} \\
\\
1 & \text{if the physician's total payments are between the total payment values at the 40th and 60th percentiles for the physician's province-specific medical specialty group} \\
\\
1 + \log (B / B_{60}) & \text{if the physician's total payments (B) are above the total payment value at the 60th percentile (B_{60}) for the physician's province-specific medical specialty group}
\end{cases}
$$

2.4   2004 National Physician Survey

Various sources of data can be used to examine differences between urban and rural physicians with respect to medical practice characteristics, and each data source has its strengths and weaknesses. Tepper, for instance, has used data from the NPDB to trace the changing practice patterns of family physicians over a number of years, because this database contains physicians' FFS billing data that can be used to study what family physicians do, how much they do, etc.[12] Similarly, Chan and Schultz have used administrative information from various sources, including physician billing data from the Ontario Health Insurance Plan, to examine the practice characteristics of family physicians in Ontario.[13]

However, as payment systems evolve, a growing number of family physicians may choose to be partially or fully remunerated through non-fee-for-service (alternative) payment plans. The practice characteristics of these physicians may not be adequately reflected in studies that rely solely on FFS billing data. Additionally, it is possible that FFS and non-FFS physicians practise somewhat differently.

Information about practice characteristics can also be obtained from surveys. Such information is self-reported by physicians who participate in the surveys, regardless of how they are reimbursed. Self-reported data may also have limitations (for example, inaccuracies due to faulty recollection or social desirability factors); however, since a number of studies on practice profiles have been published using FFS billing data, data from the 2004 National Physician Survey (NPS) were used in this study to examine urban–rural differences in family physicians' medical practice characteristics. Another reason for using NPS data in this study is to evaluate the extent to which results from different data sources are consistent with each other.

The 2004 NPS was jointly conducted by the College of Family Physicians of Canada, the Canadian Medical Association and the Royal College of Physicians and Surgeons of Canada, with financial support from Health Canada and CIHI. The 2004 NPS was conducted between February and June 2004 and included all licensed family medicine and specialist physicians in Canada. Detailed information on the 2004 NPS, including survey methodologies, questionnaire forms, summary results and data request procedures, is available from the NPS Web site (www.nps-snm.ca).

The analysis in Chapter 4 is based on data from the 11,041 family physicians who replied to the 2004 NPS. There are several reasons for focusing on family physicians within the context of this report. Firstly, most physician visits made by patients are to family physicians. According to the 1999 National Population Health Survey, "Of those who received health care, [general practitioner/family] physicians were by far the most frequent providers: 81% of the population visited a [general practitioner/family] physician . . . [and] the delivery of health care, even when broadly defined, is primarily the responsibility of the family physician."[14] Also, as will be shown in Chapter 3, the vast majority of physicians practising in rural and small town Canada are family physicians and only 2.4% of all specialists work in rural areas. Lastly, the number of rural-based specialists included in the 2004 NPS is not large enough to allow a meaningful analysis, particularly if different specialties are examined separately or if "rural" is sub-divided into finer geographic categories.

The response rates for the family physician survey and the specialist survey were virtually identical, at about 36%. Altogether, 11,041 family physicians from all provinces and territories responded. According to CIHI, "the demographic composition of physicians who responded to the 2004 NPS is very similar to that of the total physician population. There is a high overall correlation between respondent and population demographic characteristics ($r = 0.98$ for province, territory, age, sex and broad medical specialty groups). Additional analyses showed that NPS respondents were also similar to non-respondents in terms of the same demographic characteristics ($r = 0.94$)."[15]

The variables used in Chapter 4 are from question 7 (area of professional activity), question 8 (clinical practice profile), question 9 (maternity and newborn care) and question 18 (changes to practice) of the 2004 NPS family physician questionnaire. Because of the large number of variables contained in these questions, only selected variables are used in the analysis as illustrations. Examples of "areas of professional activities" are addiction medicine, chronic disease management, international medicine and psychiatry. Examples of "clinical practice profile" are pulmonary function testing, intrauterine device insertion, endoscopy and skin biopsy. Examples of "changes to practice" are plans to reduce scope of practice and plans to specialize in an area of medical practice. Appendix E contains questions 7, 8, 9 and 18 of the 2004 NPS.

2.5 Geographical Units of Analysis and Urban−Rural Designations

In this study, two generic geographical units were employed: points (expressed as latitude and longitude locations) and regions (expressed by the administrative boundaries of areas such as provinces, territories, counties, cities, towns, villages, First Nations communities, etc.).

Points were used to generate physician and population distribution maps of Canada. The latitude/longitude locations of physicians, in general and by specialty, were derived from the postal codes provided for each physician in the 2004 SMDB. The latitude/longitude values used to plot the distribution of the general Canadian population were derived from the locations of the 52,993 dissemination areas used by Statistics Canada for the 2001 census.[16] "The dissemination area (DA) is a small, relatively stable geographic unit composed of one or more blocks. It is the smallest standard geographic area for which all census data are disseminated. DAs cover all the territory of Canada."[17]

The regional units that were employed in this study were based on the Standard Geographical Classification (SGC) system of Statistics Canada.[18] Essentially, this is a multi-level, hierarchical classification of geographical/administrative units of varying sizes that has been developed for the collection and dissemination of statistical information in Canada. The postal codes that were available in each of the three data sets (that is, SMDB, NPDB and NPS) allow for the location of physicians within this standard area classification scheme. Subsequently, these units are used to report aggregate counts or relative proportions of the physician characteristics described earlier.

The two largest sub-national geographical units employed in examining physician distribution in this study were:

- **Province/territory:** SMDB (province/territory that corresponds to physicians' preferred mailing address); NPDB (province reporting physicians' characteristics and payment information); 2004 NPS (province/territory of main practice characteristics).

- **Census division (CD):** A CD is a relatively large administrative unit applied to areas established by provincial/territorial law and may be equated with counties, regional districts, regional municipalities and other types of provincially and territorially legislated areas. In Newfoundland and Labrador, Manitoba, Saskatchewan and Alberta, provincial law does not provide for these administrative geographic areas. Therefore, CDs have been created by Statistics Canada in cooperation with these provinces for the collection and dissemination of statistical data. In the Yukon Territory, the CD is equivalent to the entire territory. In this study, the 288 CDs presently defined were used to compute physician-to-population ratios based on SMDB data.

When physician distribution is discussed, one of the typical geographical units of analysis is urban versus rural areas, since comparisons are often made between, for example, physician-to-population ratios in urban areas versus physician-to-population ratios in rural areas. In Canada, there is no officially sanctioned or universally accepted definition of "rural." Different agencies or researchers may adopt different definitions to suit their purposes. In this study, rural is understood mostly in terms of population size and distance from an urban area. In short, a rural community has a small population and is far away from an urban centre. It should be pointed out that other terms somewhat related to "rural" are also used in the literature, such as "northern," "remote," "isolated," "small town" and "under-serviced area." While these terms are not identical, there is considerable overlap in meaning in the sense that they all refer to places with a small population and some distance away from a major urban centre.

The SGC system of Statistics Canada is used in this study to differentiate the urban and rural areas of Canada. Part of the hierarchical SGC system, a "census subdivision" (CSD, N = 5,600 for the 2001 census) "is a general term applying to municipalities (as determined by provincial legislation) or their equivalents, e.g. Indian reserves, Indian settlements and unorganized territories. Municipalities are units of local government."[18] Groupings of CSDs or individual CSDs with large population size and high density are categorized as urban. In the SGC system, these are referred to as "census metropolitan areas" (CMAs) and "census agglomerations" (CAs). All other CSDs are included as "rural and small town Canada."[19] Rural and small communities are classified into metropolitan influence zones (MIZ) categories.[20] With the MIZ approach, a municipality is assigned to one of four categories, depending on the percentage of its residents who commute to work in the urban core of any CMA or CA.[21] The standard terminology for these units is briefly outlined below:

- **Census metropolitan area:** CMAs are very large urban areas with core populations of at least 100,000 people.

- **Census agglomeration:** CAs are large urban areas with core populations that range from 10,000 to just under 100,000 people. CAs with populations of 50,000 and over are subdivided into census tracts, leading to a distinction between tracted and non-tracted CAs.

- **Strong MIZ:** Municipalities in which more than 30% of the residents commute to work in an urban core.

- **Moderate MIZ:** Municipalities in which between 5 and 30% of the residents commute to work in an urban core.

- **Weak MIZ:** Municipalities in which less than 5% of the residents commute to work in an urban core.

- **No MIZ:** Municipalities in which fewer than 40 or none of the residents commute to work in an urban core.

- **Territories:** Municipalities other than Whitehorse and Yellowknife in the territories.

CMAs/CAs range in size from 10,000 to well over 1,000,000 inhabitants. To differentiate between these urban locations, physicians were assigned to groups of CMAs/CAs based on population sizes. The resulting 11 urban–rural categories employed in this study are as follows:

Urban (CMA/CA)
- Census metropolitan areas
  - 1,000,000 and more inhabitants
  - 500,000 to 999,999 inhabitants
  - 100,000 to 499,999 inhabitants
- Census agglomerations—tracted
  - 50,000 to 99,999 inhabitants
- Census agglomerations—non-tracted
  - 25,000 to 49,999 inhabitants
  - 10,000 to 24,999 inhabitants

Rural (rural and small town Canada)
- Strong MIZ
- Moderate MIZ
- Weak MIZ
- No MIZ
- Territories (excluding Whitehorse and Yellowknife)

The only physicians who could not be placed into these urban–rural categories were the Alberta rural physicians in the NPDB. For that database, the urban categories and sub-categories could be identified, but the MIZ classifications could not be applied, because Alberta rural municipality information was not provided.

The family physician component of the 2004 NPS contains relatively few cases (11,041 respondents). Analyses of the NPS data using the 11-category classification scheme described above would have led to difficulties associated with small numbers. Therefore, the number of geographical units of analysis was reduced to six—three urban and three rural. These are:

Urban (CMA/CA)
- Communities with a population of a million or over
- Communities with a population of 100,000 to 999,999
- Communities with a population of 10,000 to 99,999

Rural (rural and small town Canada)
- Strong MIZ communities
- Moderate MIZ communities
- Weak or no MIZ communities (including communities other than Whitehorse and Yellowknife in the territories)

2.6   Measures of Unequal Distribution

In this study, unequal geographic distribution refers to the fact that the spatial distribution of physicians does not match the spatial distribution of the general population. Geographical distributions of physicians and the general population of Canada were examined with data from SMDB in conjunction with population counts and hospital locations. The measures of unequal distribution that have been included in this report are physician-to-population ratios (described in section 2.6.1), Gini coefficients (explained in section 2.6.2 and Appendix B) and distance measurements (computation methodologies described in section 2.6.3 and Appendix B).

2.6.1   Physician-to-Population Ratios

Physician-to-population ratios were computed by aggregating physician counts for two geographical units: provinces/territories and CDs. As the SMDB data provided counts for numbers of physicians in 2004, the 2001 census counts of the general population could not be used. Instead, the 2004 postcensal population estimates produced and published by Statistics Canada were used.[22] The ratios were computed for each of the 13 provinces and territories and the 288 CDs of Canada. The ratios are expressed as the number of physicians per 10,000 population for each of these geographical units. Finally, the ratios were computed for all physicians in general or family practice and also for each of the specialties.

2.6.2   Gini Coefficients

Over the past century, a number of techniques have been developed to determine the "fair share" of the distribution of goods, services, income, health status and so forth. Many of these measures are based on an examination of what is known as a "Lorenz curve" and an associated measure known as the "Gini concentration ratio." The Lorenz curve is "a cumulative frequency curve that compares the distribution of a specific variable with the uniform distribution that represents equality. This equality distribution is represented as a diagonal line, and the greater the deviation of the Lorenz curve from this, the greater the inequality."[23] Appendix B provides more details on the Lorenz curve and the Gini coefficient.

2.6.3   Distance Measures

Access to health care providers or hospital services may be measured in many different ways. The measure employed in this study is the simple, straight-line distance between the locations of the general population and the nearest physician or hospital (see Appendix B for more details).

The distance was computed from each of the latitude/longitude locations of Canada's 52,993 dissemination areas to the nearest physician and to the nearest hospital. For physicians, the latitude/longitude locations are derived from the SMDB postal codes and nearest distances computed for all physicians in general or family practice and for each specialty. For hospitals, the latitude/longitude locations are derived from the postal codes of two groups of hospitals that are contained in the CIHI database known as the "Canadian Management Information Systems Database." Both groups of hospitals are referred to as "general" hospitals, but differ with respect to whether they have long-term care units. For this study, distances between population locations and the nearest hospital were computed using 245 general hospitals without long-term care units and 403 general hospitals with long-term care units. No distinctions were made with respect to the size of those hospitals.

3. Enumeration and Mapping of Canada's Physicians

In 2004, according to the Southam Medical Database (SMDB), there were 60,612 active physicians in Canada, with 31,286 being family physicians and the remaining 29,326 being specialists (as defined in section 2.2). These figures represent an increase of 1.9% in the numbers of active physicians enumerated in 2003.[10] The proportional increase was approximately the same for both family physicians (2.0%) and specialists (1.9%). These 2004 counts also represent a 4.9% overall increase compared with the numbers of physicians enumerated in 2000.[10] Over that period of time, the increase in family physicians (7.5%) has been substantially greater than for specialists (2.2%).

The geographic location of these physicians is described in this chapter using the geographical units of analysis described earlier (see section 2.5). The following list provides examples of the communities that fall into each of the 11 categories used to differentiate urban and rural municipalities:

Urban Communities

- 1,000,000 and more inhabitants (Montréal, Que.; Toronto, Ont.; Vancouver, B.C.)

- 500,000 to 999,999 inhabitants (Calgary, Alta.; Quebec City, Que.; Winnipeg, Man.)

- 100,000 to 499,999 inhabitants (Halifax, N.S.; London, Ont.; Victoria, B.C.)

- 50,000 to 99,999 inhabitants (Fredericton, N.B.; Charlottetown, P.E.I.; Kamloops, B.C.)

- 25,000 to 49,999 inhabitants (Moose Jaw, Sask.; Rimouski, Que.; Truro, N.S.)

- 10,000 to 24,999 inhabitants (Estevan, Sask.; Grand Falls–Windsor, N.L.; Yellowknife, N.W.T.)

Rural Communities

- Strong metropolitan influence zone or MIZ (Conception Harbour, N.L.; Escuminac, Que.; Stirling, Alta.)

- Moderate MIZ (Cardigan, P.E.I.; Gananoque, Ont.; Kimberley, B.C.)

- Weak MIZ (Chance Cove, N.L.; Pinawa, Man.; Lunenburg, N.S.)

- No MIZ (Grand Manan, N.B.; Miminegash, P.E.I.; Minton, Sask.)

- Territories, excluding Whitehorse and Yellowknife (Iqaluit, Nun.; Norman Wells, N.W.T.; Watson Lake, Y.T.)

Using the latitude/longitude location for each physician, the geographical distribution of Canada's physicians is shown in Figure 1. That distribution contrasts sharply with the distribution of the population of Canada (Figure 2). In general, physicians are primarily located in urban areas, and such concentrations are particularly evident when examining the distributions by individual specialties (see Appendix F).

Figure 1.   Distribution of Physicians in Canada, 2004

One dot represents
one physician (N = 60,612).

Dots may overlap for the same
geographic location.
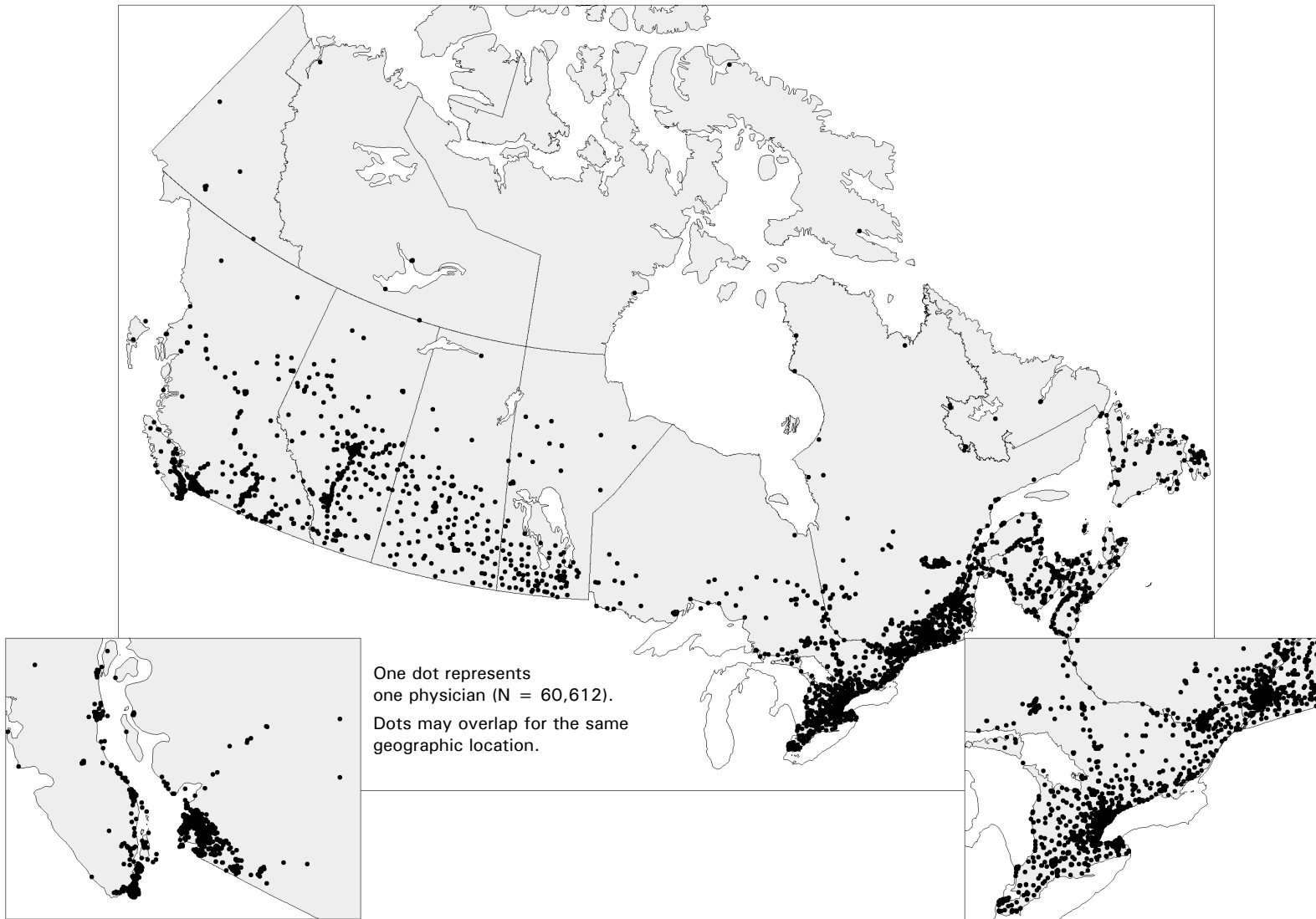
Source: SMDB, CIHI.

Figure 2. Generalized Distribution of the Canadian Population, 2001

Sparsely Populated

One dot represents one dissemination area with at least 100 inhabitants recorded in the 2001 Census.
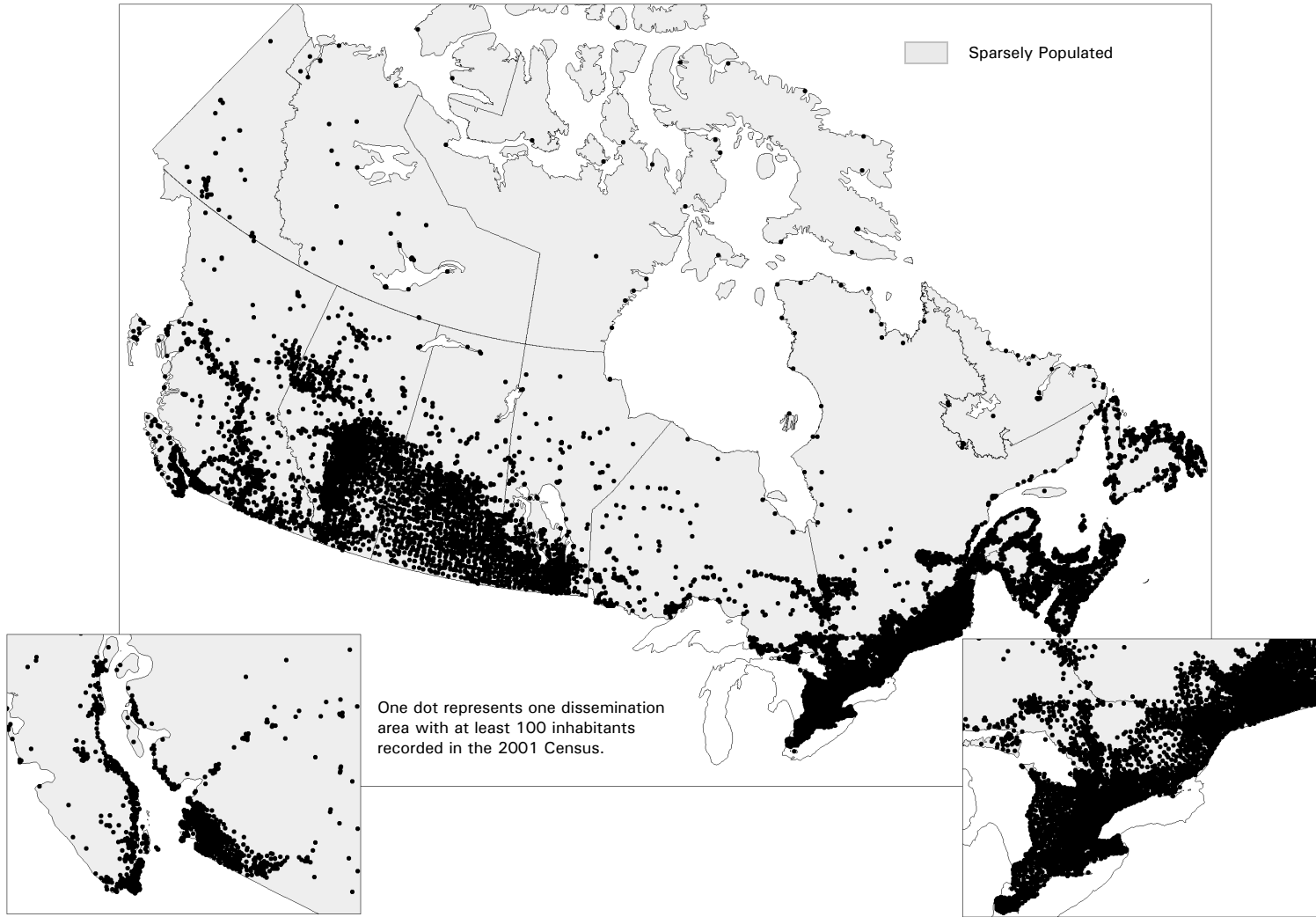
Source: 2001 Census, Statistics Canada.

As one might expect, the physician distribution that most closely resembles the distribution of the Canadian population is that of family physicians (Figure F.1). The overall specialist distribution (Figure F.2) resembles the distribution of Canada's urban centres. Specialists who are more likely to be located in both large and small urban centres include those in internal medicine (Figure F.3), pediatrics (Figure F.6), psychiatry (Figure F.8), general surgery (Figure F.11) and obstetrics and gynecology (Figure F.14). Other specialists are almost totally concentrated in the largest urban centres. This is especially true for laboratory specialists, who focus their work in medical microbiology (Figure F.22) and medical biochemistry (Figure F.27), and specialists in medical science (Figure F.28) and medical genetics (Figure F.29).

The contrasts between rural and urban distributions of all physicians by province and territory are shown in Table 1. With the exception of the smaller urban communities, the percentage of all physicians in Canada exceeds the percentage of the Canadian population in the respective large urban categories. For example, 38.7% of all physicians can be found in urban communities with 1,000,000 or more inhabitants, including Montréal, Toronto and Vancouver, where only 33.6% of the total Canadian population lives. The converse occurs for rural and small town Canada. For instance, only 9.4% of all physicians are located in rural areas, compared with 21.1% of Canadians. These figures differ little from the 1996 figures of 9.8% and 22.2%, respectively, but seem to have stabilized since 1991, when the percentages were 14.9% and 29.2%, respectively.[1]

Further regional variations in the characteristics of Canada's physicians are highlighted in the following sections of the report.

Table 1.   Number of Physicians by Province/Territory and Urban–Rural Category, Canada, 2004

	Urban Canada: Census Metropolitan Areas/Census Agglomerations					
	1,000,000 +	500,000–999,999	100,000–499,999	50,000–99,999	25,000–49,999	10,000–24,999
N.L.	n/a	n/a	528	n/a	76	110
P.E.I.	n/a	n/a	n/a	137	n/a	40
N.S.	n/a	n/a	1,386	n/a	211	n/a
N.B.	n/a	n/a	617	177	n/a	182
Que.	8,561	2,287	1,622	532	1,221	342
Ont.	10,171	3,926	5,056	901	547	266
Man.	n/a	1,567	n/a	n/a	106	46
Sask.	n/a	n/a	1,047	n/a	130	108
Alta.	n/a	4,673	n/a	427	162	81
B.C.	4,695	n/a	1,440	751	427	297
Y.T.	n/a	n/a	n/a	n/a	n/a	51
N.W.T.	n/a	n/a	n/a	n/a	n/a	40
Nun.	n/a	n/a	n/a	n/a	n/a	n/a
Canada	**23,427**	**12,453**	**11,696**	**2,925**	**2,880**	**1,563**
% of All Physicians	**38.7**	**20.6**	**19.3**	**4.8**	**4.8**	**2.6**
% of Canadian Population	**33.6**	**15.7**	**17.8**	**5.2**	**4.4**	**2.6**

	Rural and Small Town Canada					Total
	Strong MIZ	Moderate MIZ	Weak MIZ	No MIZ	Territories	
N.L.	2	73	198	5	n/a	**992**
P.E.I.	12	13	8	0	n/a	**210**
N.S.	19	98	284	2	n/a	**2,000**
N.B.	15	103	160	8	n/a	**1,262**
Que.	228	782	475	95	n/a	**16,145**
Ont.	384	395	416	5	n/a	**22,067**
Man.	31	120	188	20	n/a	**2,078**
Sask.	11	36	167	30	n/a	**1,529**
Alta.	68	129	407	6	n/a	**5,953**
B.C.	49	185	388	25	n/a	**8,257**
Y.T.	n/a	n/a	n/a	n/a	10	**61**
N.W.T.	n/a	n/a	n/a	n/a	11	**51**
Nun.	n/a	n/a	n/a	n/a	7	**7**
Canada	**819**	**1,934**	**2,691**	**196**	**28**	**60,612**
% of All Physicians	**1.4**	**3.2**	**4.4**	**0.3**	**0.1**	**100.0**
% of Canadian Population	**5.6**	**7.6**	**6.6**	**1.1**	**0.2**	**100.0**

Note:
n/a: not applicable

Sources: 2004 Population Estimates, Statistics Canada; SMDB, CIHI.

3.1 Sex Distribution

In 1986, 17.9% of all active physicians in Canada were female. This percentage jumped to 23.0% in 1991[1] and has grown steadily ever since. However, the rate of increase seems to have declined over the past five years or so. In 2000, the percentage of female physicians reached 29.3% and has hovered in the low 30s for the past few years: 30.2%, 30.9% and 31.3% in 2001, 2002 and 2003, respectively.[10] Analysis of the 2004 SMDB data indicates that 32.0% of Canada's physicians are female.

Substantial regional variations exist with respect to the male–female composition of Canada's physician workforce. Figure 3 illustrates some of that variation by comparing sex distribution by province and territory. In the three territories, the percentage of females is high; Nunavut has the highest percentage (57.1%). The highest provincial percentage is in Quebec (36.6%), while the lowest is in Prince Edward Island (23.4%).

Figure 3.   Male–Female Composition of Physicians by Province/Territory, Canada, 2004
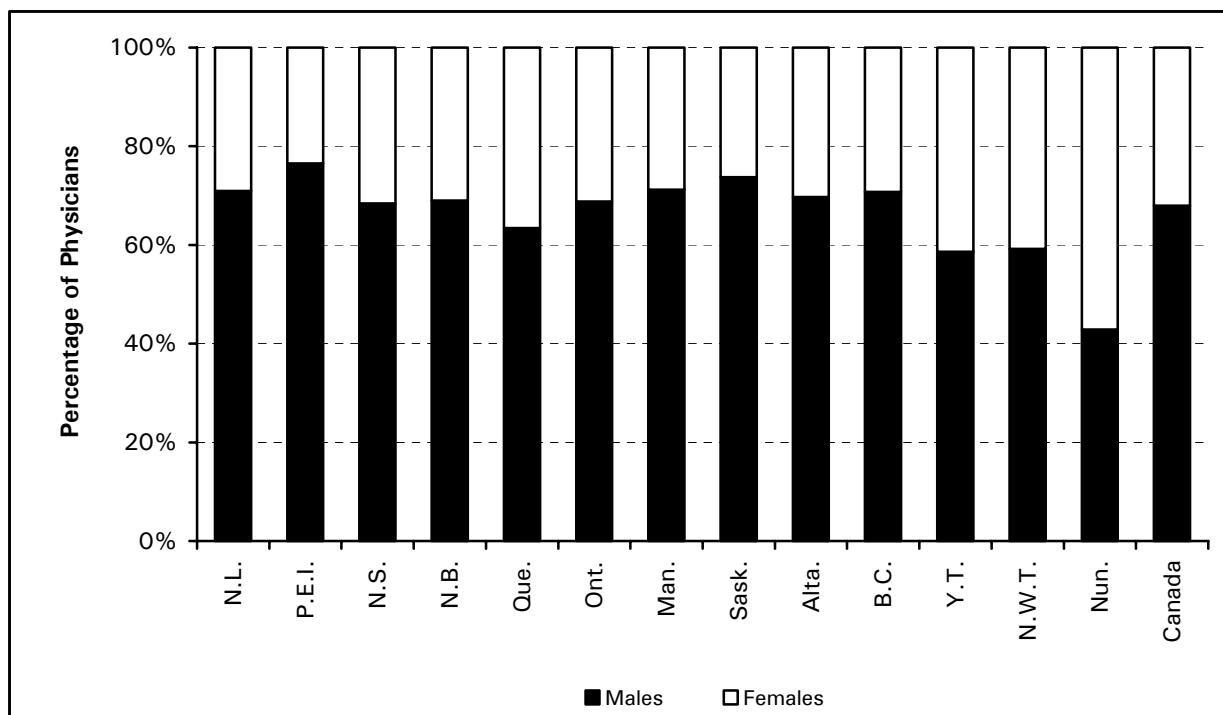
Source: SMDB, CIHI.

Even greater variation occurs across the urban–rural spectrum and by specialty. These differences are shown in Table 2a (which provides counts) and Table 2b (which indicates the percentages of males and females in the respective categories of these characteristics). Table 2a supports the earlier observation that very few specialists are located in rural Canada. This should be kept in mind when examining the rural percentages of males and females shown in Table 2b, as those percentages of specialists are computed using small numbers.

A slight majority (52.0%) of Canada's male physicians are specialists. By comparison, 59.0% of all female physicians are in general practice or family medicine. But there are major differences in urban and rural Canada, which can be seen by examining Table 2a. In urban Canada, only 44.0% of male physicians are in family medicine, compared with 55.9% of females. As shown in the introduction to this chapter, maps of the distribution of Canada's physicians (Figure 1 and, more specifically, the series of maps presented in Appendix F) indicate that few specialists practise in rural Canada. In rural areas of the country, 85.8% of male physicians and 91.3% of female physicians are in general or family practice.

Table 2a also shows some of the similarities and differences between male and female physicians and urban and rural physicians in terms of specialties. These can be highlighted, for example, by examining the three most common specialties in each of the male–female and urban–rural columns of that table. In urban Canada, with percentages expressed in terms of specialists only, male physicians practise in internal medicine (22.7%), psychiatry (11.9%) and anesthesia (8.6%). Percentages for all other specialties for urban male physicians are less than 7%. The pattern differs for urban female physicians. Female specialist physicians practise mainly in internal medicine (21.1%), psychiatry (18.3%) and pediatrics (12.6%). For rural specialist physicians, the three top specialties are identical for both male and female physicians, but the order is different. For male rural specialist physicians, the order is general surgery (24.3%), internal medicine (16.9%) and psychiatry (13.3%); for female rural specialist physicians, psychiatry (23.0%), internal medicine (19.6%) and general surgery (11.5%).

Table 2b provides a complementary view of the distribution of urban–rural and male–female physicians across specialties. Recalling that 32.0% of all active physicians in Canada are female, this table identifies the percentages of males and females for each specialty for both urban- and rural-based physicians. In urban areas, the percentage of female family physicians is higher (37.6%). The percentage of female clinical specialists is slightly lower in urban areas and even more so in rural areas. And, overall, there are substantially fewer female surgical specialists in both urban (17.8%) and rural (14.4%) areas. Variations of the male–female proportions within the specialist fields can also be seen in Table 2b. Only two specialties have percentages of female physicians that are greater than or equal to male physicians. These are dermatology and nuclear medicine in rural parts of the country. However, this observation must be treated with caution, as the numbers of rural specialists in these fields are extremely small.

Table 2a. Urban−Rural Number of Physicians by Sex and Specialty, Canada, 2004

	Urban			Rural			Sex Not Stated	Total Canada
	Male	Female	Total	Male	Female	Total		
1.0 Family Medicine	**16,345**	**9,868**	**26,213**	**3,357**	**1,557**	**4,914**	**159**	**31,286**
2.0 Medical Specialists	**14,662**	**6,466**	**21,128**	**319**	**108**	**427**	**12**	**21,568**
2.1 Clinical Specialists								
Internal Medicine	4,732	1,641	6,373	94	29	123	6	6,502
Medical Genetics	34	25	59	0	0	0	0	59
Dermatology	314	193	507	1	2	3	0	510
Neurology	546	157	703	3	2	5	0	708
Pediatrics	1,142	981	2,123	15	12	27	2	2,152
Physical Medicine and Rehabilitation	232	106	338	6	3	9	0	347
Psychiatry	2,480	1,425	3,905	74	34	108	1	4,014
Community Medicine	235	147	382	11	2	13	0	395
Emergency Medicine	379	80	459	8	0	8	0	467
Occupational Medicine	33	11	44	0	0	0	0	45
Anesthesia	1,784	614	2,398	36	10	46	1	2,445
Nuclear Medicine	180	36	216	1	1	2	0	218
Diagnostic Radiology	1,428	473	1,901	55	11	66	0	1,967
Radiation Oncology	225	99	324	1	0	1	0	325
Total−Clinical Specialists	**13,744**	**5,988**	**19,732**	**305**	**106**	**411**	**10**	**20,154**
2.2 Laboratory Specialists								
Medical Biochemistry	66	21	87	0	0	0	0	87
Medical Microbiology	151	90	241	1	0	1	0	242
Pathology	701	367	1,068	13	2	15	2	1,085
Total−Laboratory Specialists	**918**	**478**	**1,396**	**14**	**2**	**16**	**2**	**1,414**
3.0 Surgical Specialists								
General Surgery	1,363	252	1,615	135	17	152	0	1,767
Cardio and Thoracic Surgery	270	27	297	3	0	3	1	301
Neurosurgery	209	15	224	3	0	3	0	227
Obstetrics and Gynecology	956	595	1,551	26	13	39	3	1,593
Ophthalmology	849	190	1,039	25	1	26	1	1,066
Otolaryngology	510	77	587	10	5	15	0	602
Orthopedic Surgery	1,055	78	1,133	23	2	25	0	1,158
Plastic Surgery	381	60	441	5	2	7	0	448
Urology	524	31	555	7	0	7	0	562
Total−Surgical Specialists	**6,117**	**1,325**	**7,442**	**237**	**40**	**277**	**5**	**7,724**
4.0 Medical Scientists	**33**	**1**	**34**	**0**	**0**	**0**	**0**	**34**
Total−All Specialists	**20,812**	**7,792**	**28,604**	**556**	**148**	**704**	**17**	**29,326**
Total−All Physicians	**37,158**	**17,660**	**54,818**	**3,913**	**1,705**	**5,618**	**176**	**60,612**

Note:
"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists. "Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Table 2b.   Urban–Rural Percentage of Physicians by Sex and Specialty, Canada, 2004

	Urban			Rural		
	% Male	% Female	Total	% Male	% Female	Total
1.0 Family Medicine	**62.4**	**37.6**	**100.0**	**68.3**	**31.7**	**100.0**
2.0 Medical Specialists	**69.4**	**30.6**	**100.0**	**74.7**	**25.3**	**100.0**
2.1 Clinical Specialists						
Internal Medicine	74.3	25.7	100.0	76.4	23.6	100.0
Medical Genetics	57.6	42.4	100.0	0.0	0.0	100.0
Dermatology	61.9	38.1	100.0	33.3	66.7	100.0
Neurology	77.7	22.3	100.0	60.0	40.0	100.0
Pediatrics	53.8	46.2	100.0	55.6	44.4	100.0
Physical Medicine and Rehabilitation	68.6	31.4	100.0	66.7	33.3	100.0
Psychiatry	63.5	36.5	100.0	68.5	31.5	100.0
Community Medicine	61.5	38.5	100.0	84.6	15.4	100.0
Emergency Medicine	82.6	17.4	100.0	100.0	0.0	100.0
Occupational Medicine	75.0	25.0	100.0	0.0	0.0	100.0
Anesthesia	74.4	25.6	100.0	78.3	21.7	100.0
Nuclear Medicine	83.3	16.7	100.0	50.0	50.0	100.0
Diagnostic Radiology	75.1	24.9	100.0	83.3	16.7	100.0
Radiation Oncology	69.4	30.6	100.0	100.0	0.0	100.0
Total—Clinical Specialists	**69.7**	**30.3**	**100.0**	**74.2**	**25.8**	**100.0**
2.2 Laboratory Specialists						
Medical Biochemistry	75.9	24.1	100.0	0.0	0.0	100.0
Medical Microbiology	62.7	37.3	100.0	100.0	0.0	100.0
Pathology	65.6	34.4	100.0	86.7	13.3	100.0
Total—Laboratory Specialists	**65.8**	**34.2**	**100.0**	**87.5**	**12.5**	**100.0**
3.0 Surgical Specialists						
General Surgery	84.4	15.6	100.0	88.8	11.2	100.0
Cardio and Thoracic Surgery	90.9	9.1	100.0	100.0	0.0	100.0
Neurosurgery	93.3	6.7	100.0	100.0	0.0	100.0
Obstetrics and Gynecology	61.6	38.4	100.0	66.7	33.3	100.0
Ophthalmology	81.7	18.3	100.0	96.2	3.8	100.0
Otolaryngology	86.9	13.1	100.0	66.7	33.3	100.0
Orthopedic Surgery	93.1	6.9	100.0	92.0	8.0	100.0
Plastic Surgery	86.4	13.6	100.0	71.4	28.6	100.0
Urology	94.4	5.6	100.0	100.0	0.0	100.0
Total—Surgical Specialists	**82.2**	**17.8**	**100.0**	**85.6**	**14.4**	**100.0**
4.0 Medical Scientists	**97.1**	**2.9**	**100.0**	**0.0**	**0.0**	**100.0**
Total—All Specialists	**72.8**	**27.2**	**100.0**	**79.0**	**21.0**	**100.0**
Total—All Physicians	**67.8**	**32.2**	**100.0**	**69.7**	**30.3**	**100.0**

Note:
"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists. "Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

3.2   Age Distribution

"Population aging" is a popular catchphrase. Figure 4 illustrates this phenomenon for Canada's physicians. The right-hand side of the population pyramid indicates the percentage of female physicians by selected age group. The denominator for computing the percentages is the total number of physicians. Therefore, the sum of the percentages shown by the bars on the right-hand side of the diagram equals 32.0%, which is the figure given in the previous section as the percentage of female physicians. Similarly, the left-hand side of the population pyramid shows the age group distribution for male physicians.

The average age of physicians in 2004 was 48.6 years. However, as shown in Figure 4, the average age of female physicians (44.2 years) is considerably lower than that of male physicians (50.7 years). The female physician workforce is just now beginning to age, in the sense that the female side of the pyramid shows age group percentages that progressively increase in magnitude from the peak of the pyramid (65 + years age group) towards the base. However, the percentages in the two lowest age groups (35 to 39 years and < 35 years) decrease in size rather than continuing to increase. Although there is still a long way to go, the male side of the pyramid is becoming inverted. That is, the percentages in the age groups at the peak of the pyramid are becoming larger than the percentages at the base. Conversely, the female side of the pyramid will remain fairly constant for some time to come, as close to half of the lowest age group (< 35 years) is made up of females.

For both male and female physicians, but particularly the former, the increasingly smaller percentages in the age groups at the base of Figure 4 suggest that fewer and fewer young people are being recruited into the physician workforce. This may be particularly so in light of recent evidence showing that length of medical training has increased.[24] The data underlying Figure 4 exclude postgraduate residents, which, if they were included, would tend to increase the percentages of physicians in younger age cohorts. Nevertheless, if this pattern persists, overall replacement of the physicians who are lost through retirement or death will be difficult.

Figure 4.   Physician Population Age Pyramid, Canada, 2004
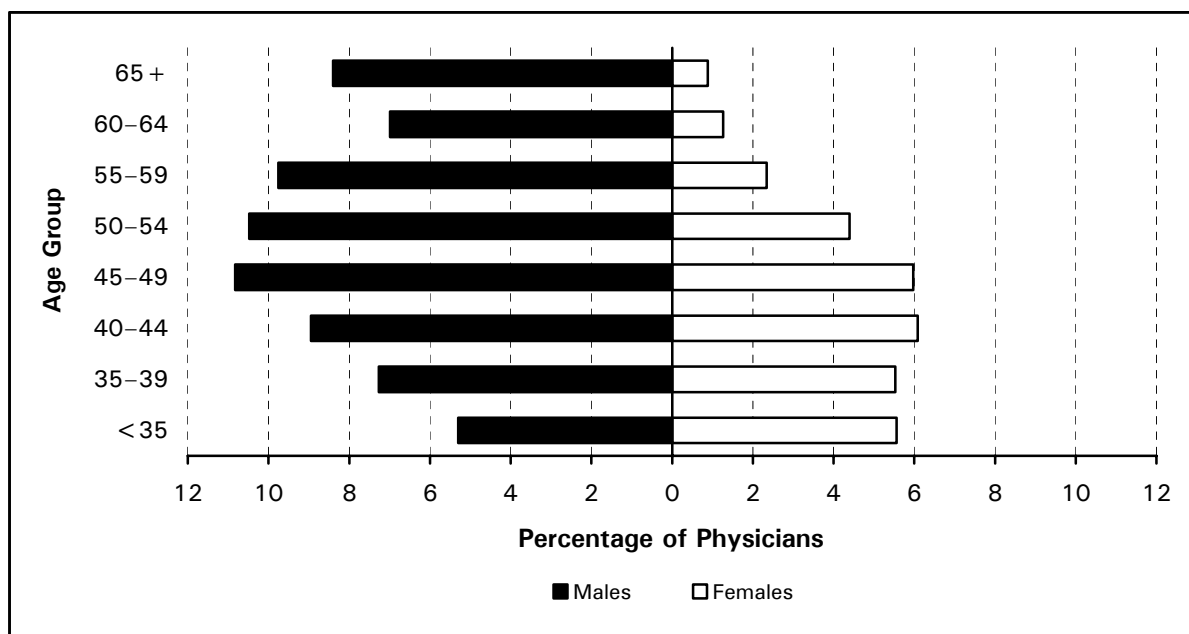
Source: SMDB, CIHI.

Some of the urban–rural variations in average age are illustrated in Figure 5 and in Appendix G. In that appendix, age group counts are provided by urban–rural category for each province and territory, and for Canada as a whole. Tables G.1 to G.4 provide these numbers for male family physicians, female family physicians, male specialists and female specialists, respectively.

Interesting patterns of average ages can be detected by examining Figure 5. For urban physicians, average age decreases with decreasing size of urban communities. This trend is particularly well developed for female physicians, as their average age in very large urban centres (that is, with a million or more inhabitants) is 45.0 years, decreasing to 42.0 years in the smallest urban communities (that is, with 10,000 to 24,999 inhabitants). A similar, but less pronounced, pattern is found for male physicians, whose average age over these community categories ranges from 51.7 years to 49.4 years, respectively.

These same patterns can be found for rural physicians. Average age decreases along with decreasing metropolitan influence. For male physicians, average age in strong MIZ communities is 52.2 years, compared with an average age of 47.8 years in no MIZ communities. The same trend exists for female physicians, with average age decreasing from 43.7 years to 39.8 years from strong MIZ to no MIZ communities, respectively. The exception to these patterns is the slightly higher average ages of physicians in the territories (44.9 years for male physicians and 43.3 years for female physicians). Even so, male physicians in the territories are younger, on average, than in any of the other urban–rural categories of communities. The average age of female physicians in the territories is slightly higher than the average age for female physicians in most of the MIZ categories (moderate to no MIZ), but similar to the average age found in strong MIZ communities and some of the urban community groupings.

Figure 5.   Average Age of Physicians, by Sex and Urban−Rural Category, Canada, 2004
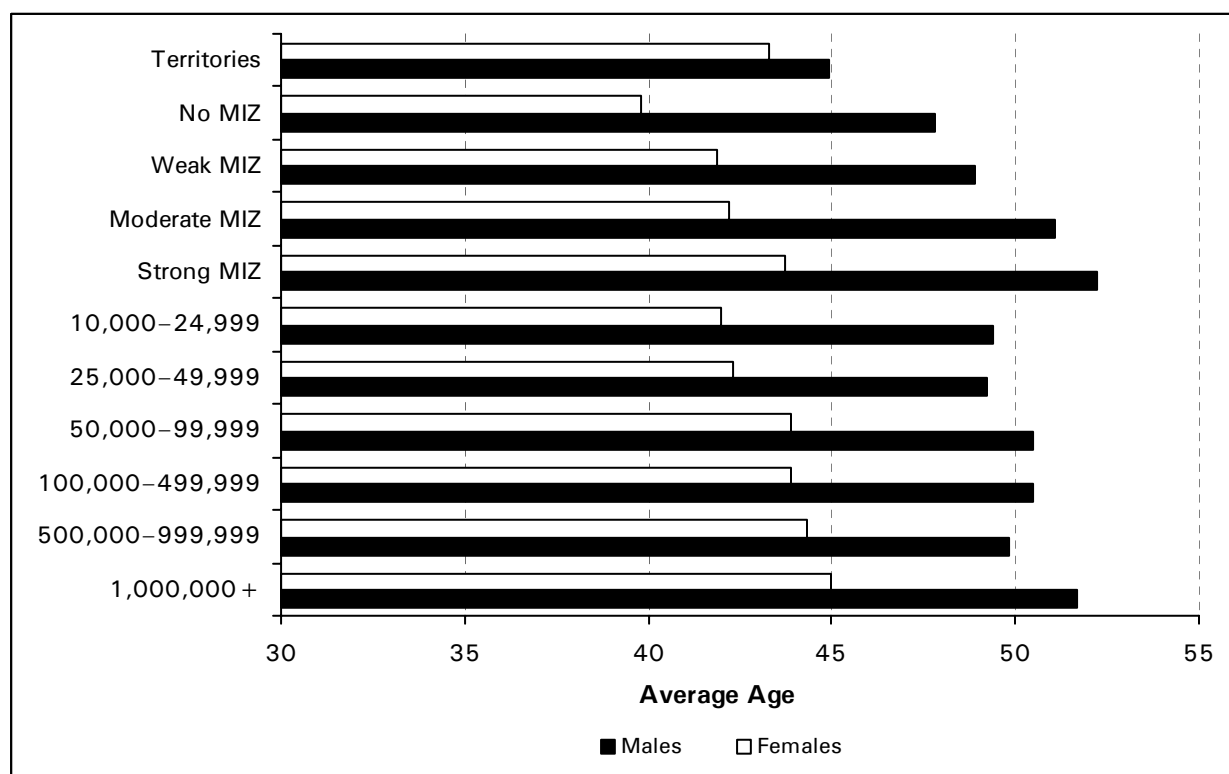
Source: SMDB, CIHI.

3.3   Language Composition

The "language" element in the SMDB must be treated with some caution. Physicians specify whether they wish to receive information from the Business Information Group in either English or French. This does not necessarily indicate whether a physician works in English, French or bilingually. Similarly, it does not show whether his or her patients speak primarily English or French. However, it can be used as a proxy or indicator for these characteristics.

As one would expect, French is the predominant language (83.0%) for those physicians practising in Quebec (Figure 6). The next-highest percentage (25.3%) of physicians using French is found in New Brunswick. For all other provinces and territories, the percentages are around 2% or less.

Figure 6.   Language Composition by Province/Territory, Canada, 2004
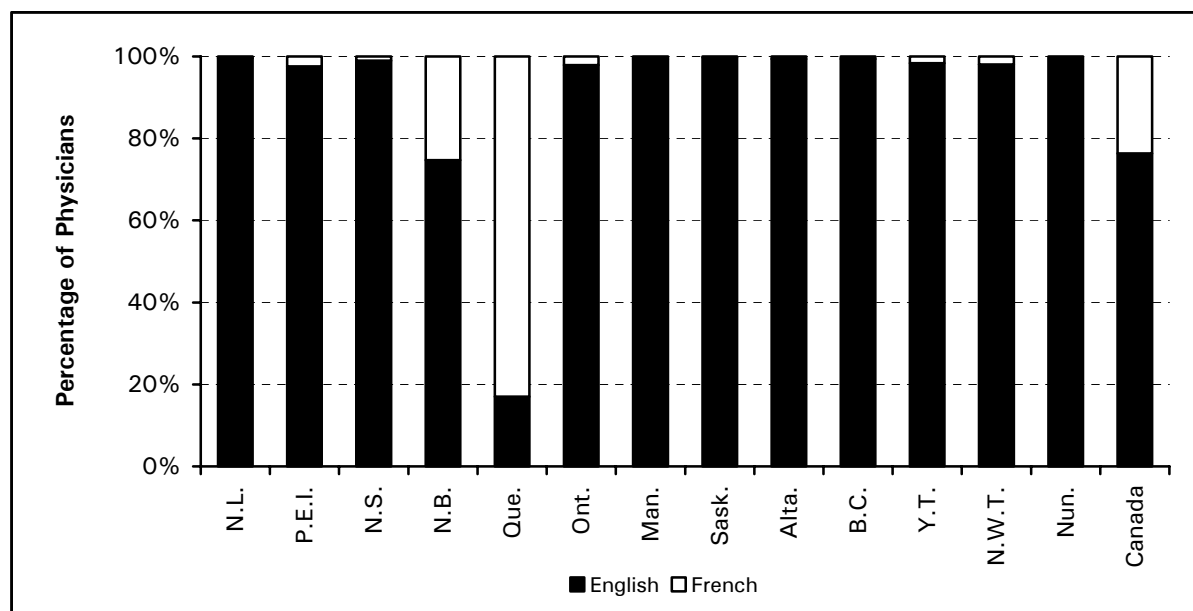
The language distribution of active physicians by urban–rural category is shown in Figure 7. The results suggest that examination of language composition by province or territory may mask sub-provincial/territorial variations. The high percentage of French in communities with 25,000 to 49,999 inhabitants (40.7%) and in no MIZ communities (44.9%) would not likely be accounted for solely by communities in Quebec and New Brunswick. It is likely that they reflect francophone physicians and populations in regions such as northern Ontario and rural Manitoba. Given concerns of providing linguistically and culturally appropriate health services, this topic could be explored further by combining SMDB data with other data sets with more language-related information. However, this is beyond the scope of the present study.

Figure 7. Language Composition by Urban–Rural Category, Canada, 2004
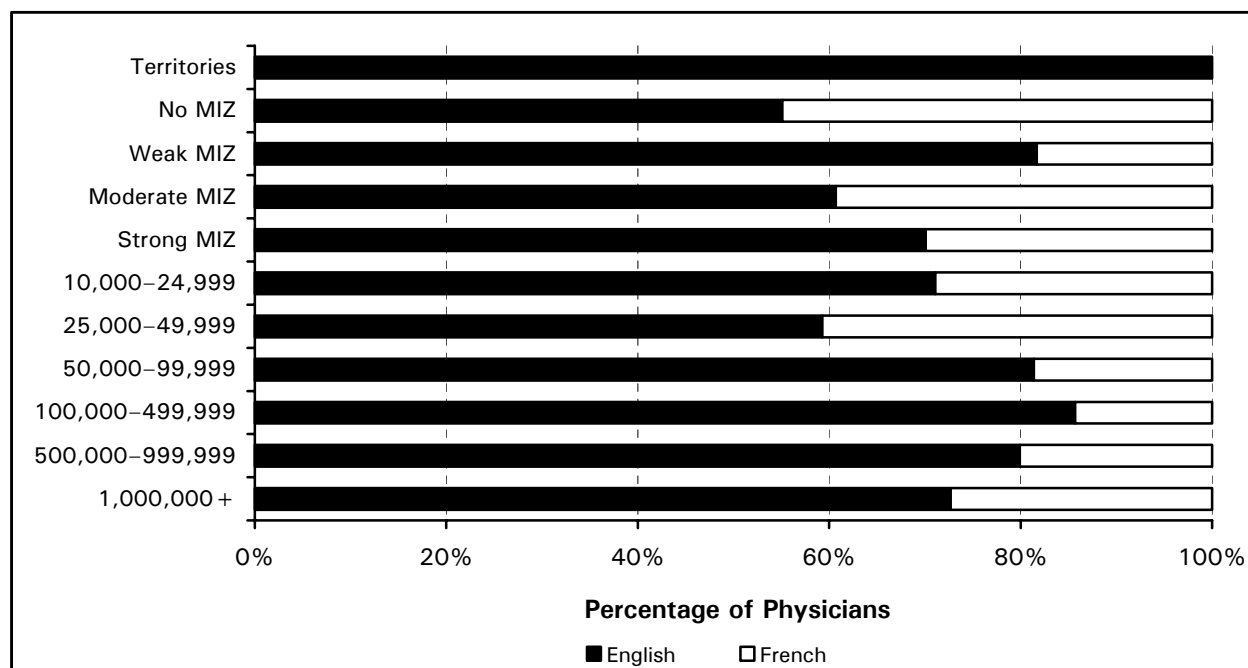
3.4   International Medical Graduates

For decades, international medical graduates (IMGs) have made up a substantial portion of Canada's medical workforce. "Through most of the 1970s, approximately 30% to 35% of Canada's physician supply was educated outside of the country. By the mid-1970s, Canada was increasingly producing its own physicians, lessening the need for foreign-educated physicians. However, recruitment of foreign-educated physicians continues in Canada, especially to work in under-serviced or predominantly rural areas of Newfoundland, Saskatchewan and Manitoba."[25]

On the other hand, the percentage of IMGs has decreased modestly, from 23.1% in 2000 to 22.6% in 2003 and now to 22.3%, according to data from the 2004 SMDB.[10] This can be attributed mainly to the decline in the percentage of foreign-educated specialists, from 24.1% of all specialist physicians in 2000 to 21.4% in 2004. By contrast, the percentage of IMG family physicians has increased from 22.1% in 2000 to 23.2% in 2004.

The contribution of IMGs to physician supply is not uniform across the country. Figure 8 illustrates the variations by province/territory. Quebec has the smallest percentage (10.9%) of foreign-educated physicians, with Prince Edward Island having the next-smallest percentage, at 16.7%. On the other hand, Saskatchewan (52.1%), Newfoundland and Labrador (41.4%) and the Yukon (33.3%) have the highest percentages of IMGs. In the remaining provinces and territories, foreign-trained physicians make up from 22.4% to 28.6% of the physician supply.

Figure 8.   Percentage of Canadian-Educated and Foreign-Educated Physicians by Province/Territory, Canada, 2004
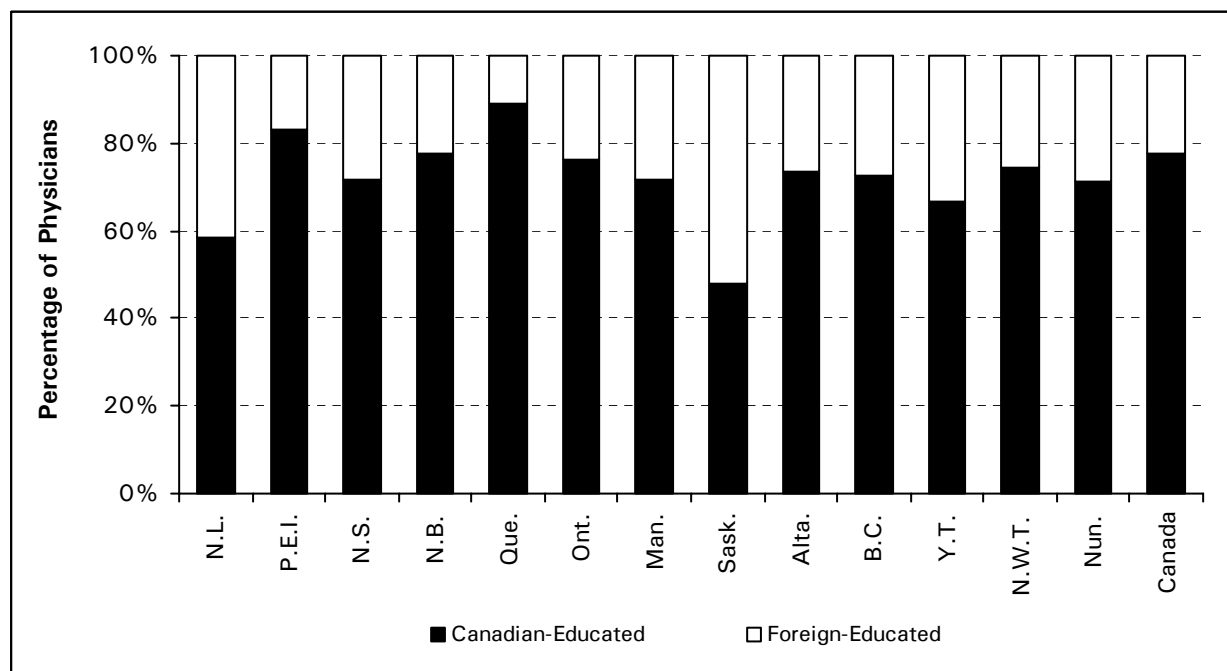
Source: SMDB, CIHI.

In 2004, 26.3% of all physicians in rural Canada were foreign-educated, compared to 21.9% in urban areas. More detailed data on IMGs and urban–rural differences can be found in Figure 9 and Table G.5 in Appendix G. The percentage of family physicians who are foreign-educated increases in rural areas, from a low of 15.0% in strong MIZ communities to a high of 50.0% in the territories. A similar, but perhaps less developed, trend also occurs with an increasing IMG percentage of family physicians associated with a decreasing urban community size. Overall, foreign-trained physicians make up 26.9% of rural family physicians, compared to 22.6% in urban areas.

Similar trends can be observed for specialists, but are not identical, because smaller cities and no MIZ communities are less likely to have specialists. Overall, foreign-educated physicians make up 22.5% of the rural specialist supply, compared to 21.3% in urban areas.

Figure 9. **Percentage of Foreign-Educated Physicians by Physician Type and Urban–Rural Category, Canada, 2004**

Percentage of Foreign-Educated Physicians

■ Family Medicine □ Specialists
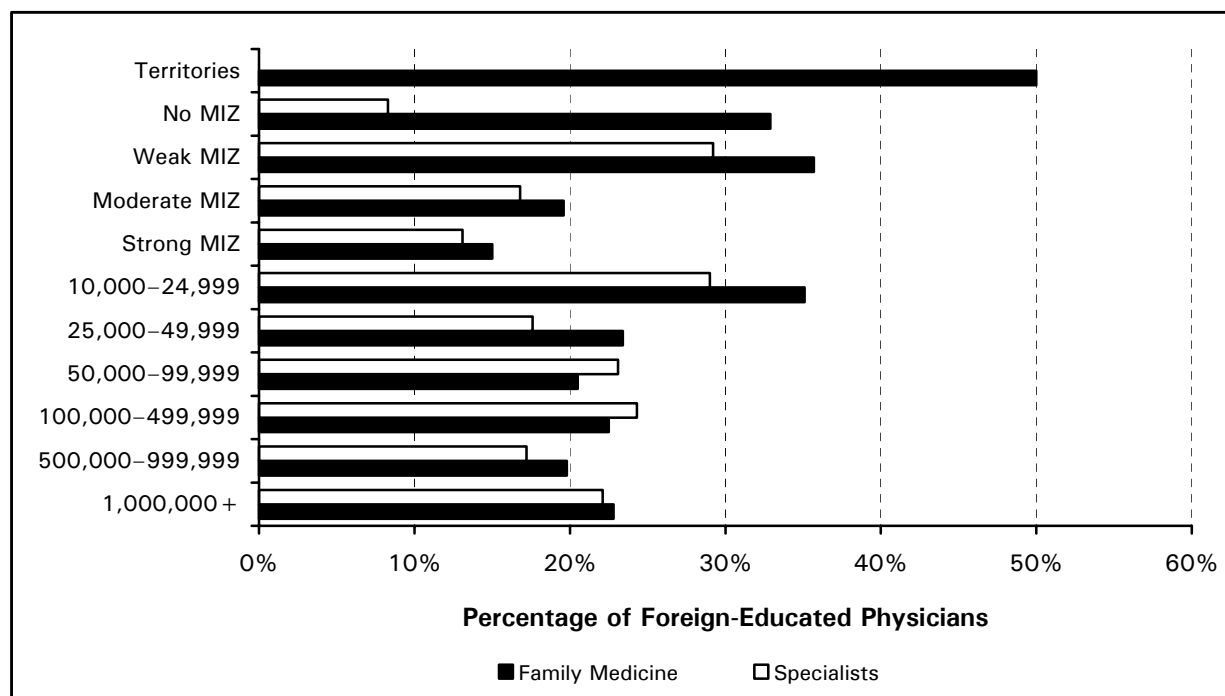
3.5   Unequal Geographical Distributions

Sixty Gini coefficients were computed to illustrate one of the ways that the degree of equality of physician distributions may be measured. These values are tabulated in Appendix G as Table G.6. Ten of the Lorenz curves from which these G values were computed are shown in Figures 10a to 10j. They are provided as pairs of Lorenz curves to illustrate some of the methodological issues surrounding this approach. So, for example, both Figures 10a and 10b show Lorenz curves for all physicians. However, Figure 10a was computed with physician and population data aggregated at the level of census divisions (CDs), while provinces/territories were used as the aggregating geographical unit for Figure 10b.

These Lorenz curves should be interpreted visually first, and then compared with their respective G values. For the Lorenz curves shown in Figures 10a to 10j, the best approach is to look first at all of the curves computed using CDs and then make comparisons with those generated from data aggregated using provinces and territories. Recall, from Chapter 2 and Appendix B, that more equal or uniform distributions are shown when the computed Lorenz curve approaches the diagonal of the plot and the G value approaches 0. Conversely, when physicians are concentrated in fewer and fewer geographical units, the Lorenz curve moves away from the diagonal and the G value increases in magnitude to a maximum of 1.

Figure 10a (all physicians) may be considered to be a composite of Figure 10c (family physicians) and Figure 10e (all specialists). Figure 10c suggests that family physicians are more evenly distributed across Canada's 288 CDs than specialists (Figure 10e). If all three of these Lorenz curves were to be plotted on the same graph, the curve for all physicians (Figure 10a) would be found somewhere between the Lorenz curves for family physicians and for all specialists. These observations can also be confirmed numerically, as the G values (see Table G.6) are equal to 0.25, 0.15 and 0.38 for all physicians, family physicians and all specialists, respectively.

Similarly, Figure 10e (all specialists) is a composite for the CD distributions of medical scientists and all clinical, laboratory and surgical specialists. Among these specialists, those in general surgery (Figure 10g) are most evenly distributed across CDs (G = 0.28). The most highly concentrated (G = 0.75) specialists are those in medical biochemistry. Their Lorenz curve (Figure 10i) runs more than halfway along the horizontal axis (indicating that there are no medical biochemists in the majority of CDs), and then exhibits a very steep slope farthest from the origin of the graph (indicating that these specialists are located in a very limited number of CDs). An identical interpretation would be found by examining where these specialists appear on the map (Figure F.27 in Appendix F).

Figures 10a and 10b. Lorenz Curves for All Physicians, Canada, 2004

By Census Division
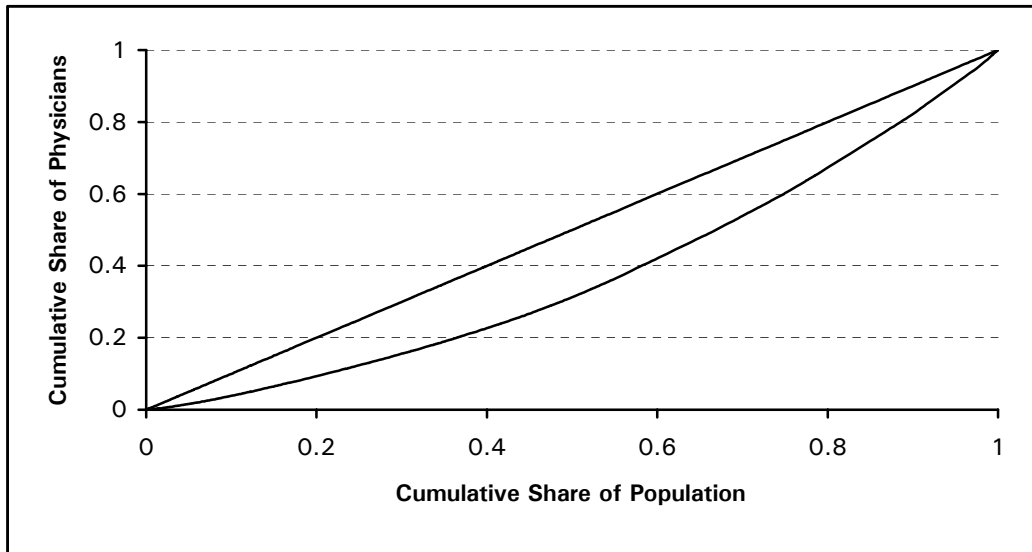
By Province/Territory
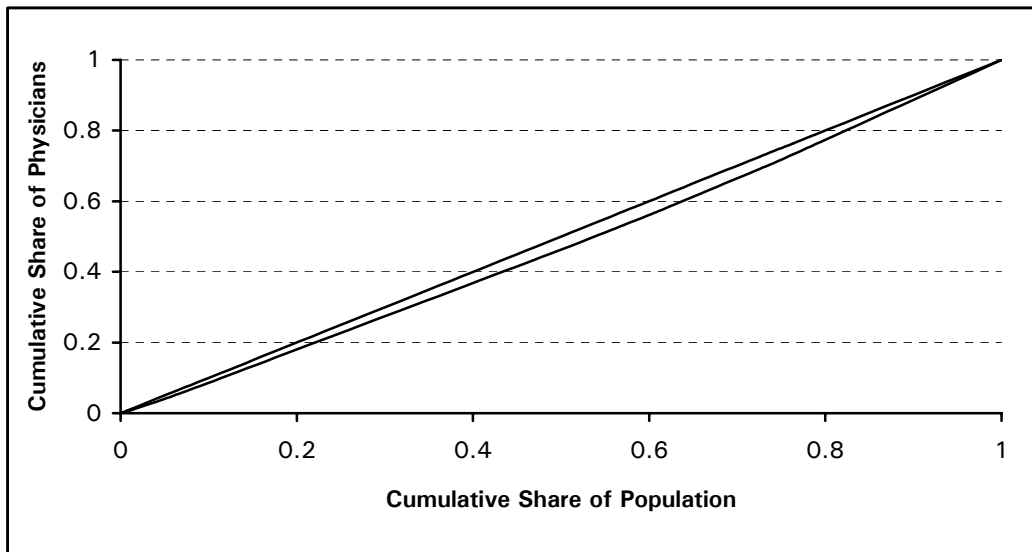
Sources: 2004 Population Estimates, Statistics Canada; SMDB, CIHI.

Figures 10c and 10d. Lorenz Curves for Family Medicine, Canada, 2004

By Census Division
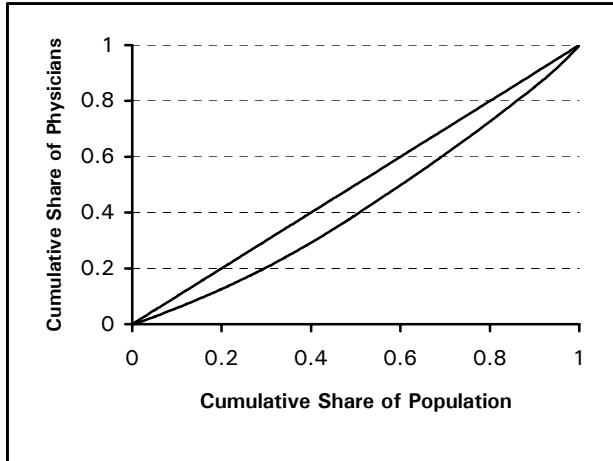
By Province/Territory
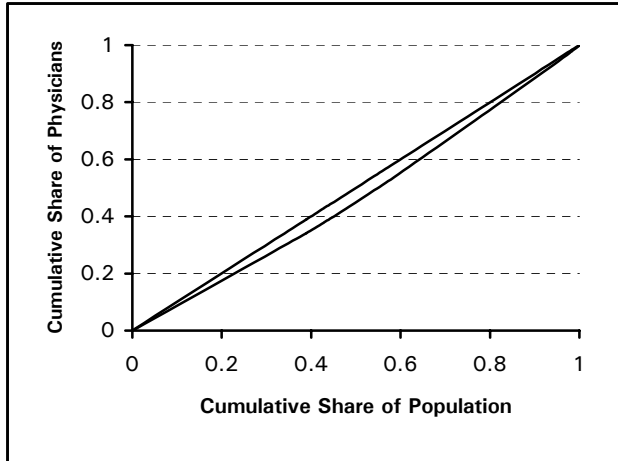
Figures 10e and 10f.   Lorenz Curves for All Specialists, Canada, 2004

By Census Division
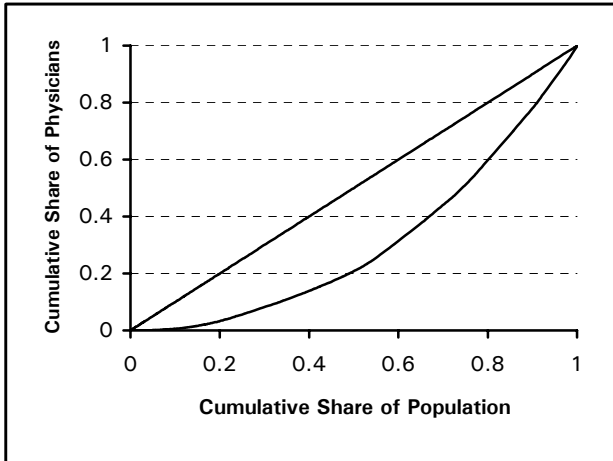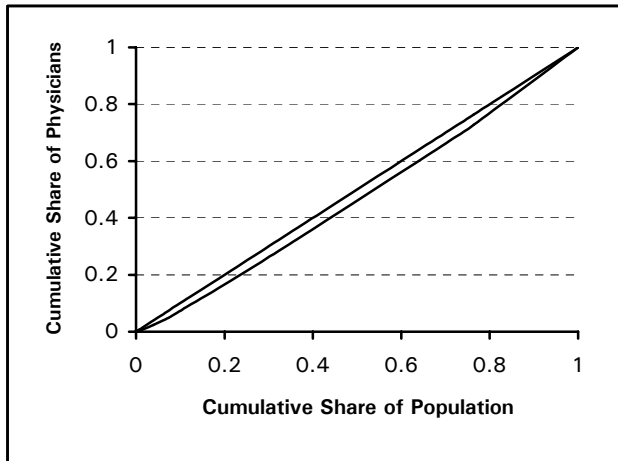
By Province/Territory

Note:
"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists. "Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Sources: 2004 Population Estimates, Statistics Canada; SMDB, CIHI.

Figures 10g and 10h. Lorenz Curves for General Surgery, Canada, 2004

By Census Division
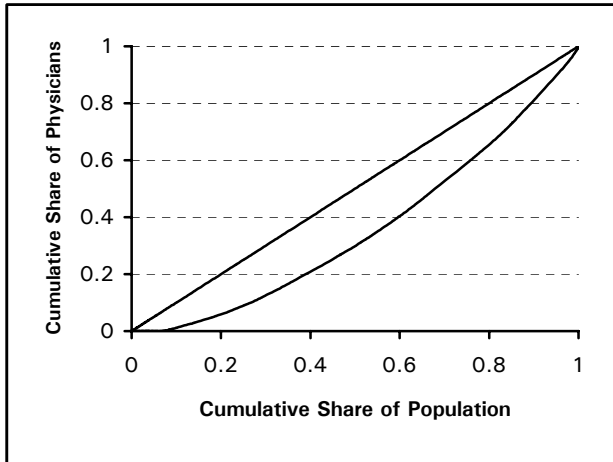
By Province/Territory
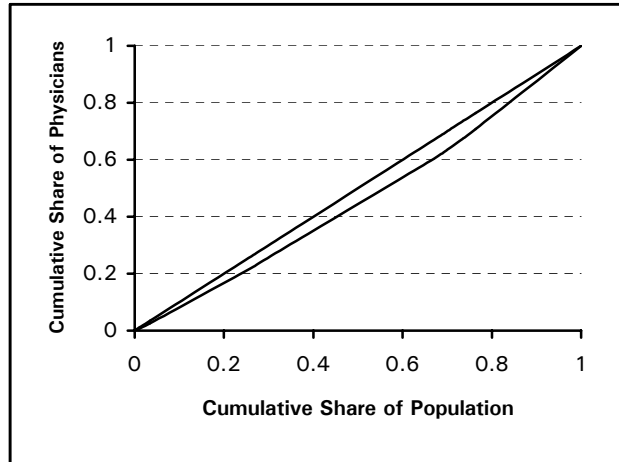
Figures 10i and 10j.   Lorenz Curves for Medical Biochemistry, Canada, 2004

By Census Division
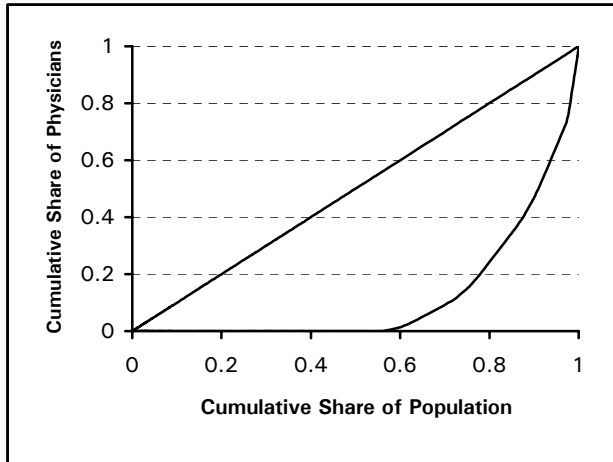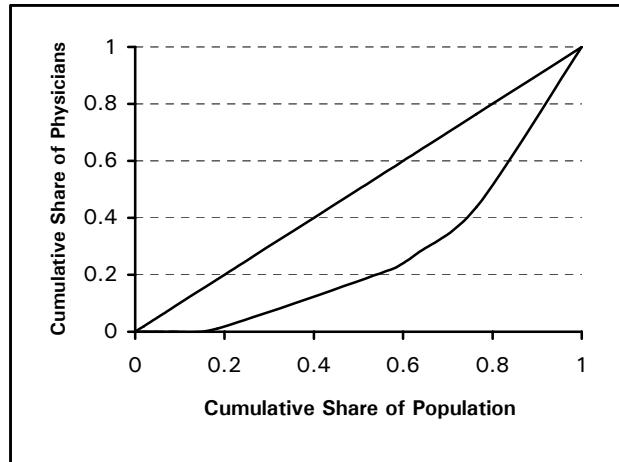
By Province/Territory

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Sources: 2004 Population Estimates, Statistics Canada; SMDB, CIHI.

The Gini coefficients computed using CDs are not a perfect match for the G values based on provinces/territories (Table G.6), but they are highly correlated with each other (r = 0.73). However, the magnitude of the latter G values is significantly reduced. For example, the CD-computed G value of 0.15 for family physicians is reduced to 0.06 when provinces/ territories are used as the geographical units for data aggregation. Similarly, the provincial/ territorial–level G values for all physicians and for all specialists are 0.05 and 0.06, respectively. The associated Lorenz curves for these sets of physicians (Figures 10b, 10d and 10f) might lead one to the conclusion that all of them display a nearly perfect, uniform distribution. It should be noted, however, that in their review of the ranges of Gini coefficients, Osberg et al. found that "even seemingly small numeric changes in aggregate inequality measures can indicate important changes in inequality."[26] On the other hand, although the G value is reduced (from 0.75 to 0.44) for physicians in medical biochemistry, the Lorenz curve for these specialists again suggests that they are highly concentrated geographically.

A Lorenz curve or a Gini coefficient provides a useful single graphical or index value that neatly summarizes the degree of uniformity of a geographical distribution. However, they are very sensitive to the levels of aggregation used. Figures 10a to 10j and Table G.6 demonstrate the masking effect of using large aggregation units (for example, provinces/ territories). Another difficulty is the fact that they do not identify "where" physicians are over- or under-represented. As well, their interpretation may not be intuitively obvious. In spite of their known limitations, physician-to-population ratios may still be a superior alternative.[6, 7]

Following the pattern for the computations of the Gini coefficients, physician-to-population ratios were computed using both CDs and provinces/territories as the geographical units of analysis and for each of the same categories of physicians. Statistical characteristics (minimum, maximum, mean and median) of these ratios are shown in Table G.6.

It is worth noting that the Gini coefficients and the physician-to-population ratios tell the same stories as they are correlated with each other. For example, using the measures for all of the physician groups (Table G.6), the association between the CD-computed Gini coefficients and the mean physician-to-population ratios is fairly strong (r = -0.54). The association between the coefficients and ratios is similar when specialist physicians alone are examined (r = -0.60). However, the association between Gini coefficients and physician-to-population ratios is weaker when provincial/territorial geographical units are used. This is true when all physicians are examined (r = 0.26) and, to a lesser extent, when specialist physicians alone are examined (r = 0.41).

Figures 11 to 13 graphically display the regional variations of physician-to-population ratios throughout Canada at the CD level. Combined numbers of family physicians and specialists are mapped in Figure 11, while Figures 12 and 13 display the ratios for family physicians and specialists, respectively. As these maps are reasonably self-explanatory, only the following points are highlighted:

- From east to west, average physician-to-population ratios follow a roughly U-shaped pattern, decreasing in value from Newfoundland and Labrador to Saskatchewan, and then rising again through Alberta, British Columbia and the Yukon.

- The U-shaped pattern is interrupted with higher values in Quebec and Ontario.

- 41.6% of Canada's population lives in regions where the overall physician-to-population ratio falls within a mapping class range of 10.1 to 20.0 physicians per 10,000 population (Figure 11).

- Equal percentages of Canadians live in regions where family physician-to-population ratios (Figure 12) are in the following two mapping class ranges: 5.1 to 10.0 (47.0%) and 10.1 to 15.0 (47.1%).

- The urban–rural dichotomy of the numbers and distribution of CDs and specialists are highlighted by the percentages of Canadians who fall into the mapping classes used in Figure 13: 30.3% in the 0.1 to 5.0 class, but the next highest percentage (24.2%) is in the 15.1 to 30.0 class.

In this study, Gini coefficients and physician-to-population ratios have been computed for 30 physician groups, using two geographical units of analysis. These indices were constructed to show some of the general spatial patterns of physician–population associations, but some of them should be used with caution. For example, underlying all of these techniques is an assumption that the physician workforce "should" be distributed in a manner that is reflective of the distribution of the general population. At the CD level of analysis, that assumption could be supported for some types of physicians (particularly family physicians). But for many specialties, that is surely a false premise. If we use some extreme cases to illustrate, it would not be reasonable to expect physicians who specialize in medical genetics, occupational medicine, nuclear medicine or neurosurgery to be distributed equally across all CDs. There are 288 CDs, but not one of these specialties alone has that many physicians.

Besides physician-to-population ratios, Lorenz curves and Gini coefficients, there are other ways to show geographic distribution patterns, such as distances between medical practitioners and population.

Figure 11.   Number of Physicians per 10,000 Population Mapped by Census Division, Canada, 2004

Number of Physicians
per 10,000 Population

30.1–40.0
20.1–30.0
10.1–20.0
0.1–10.0
None
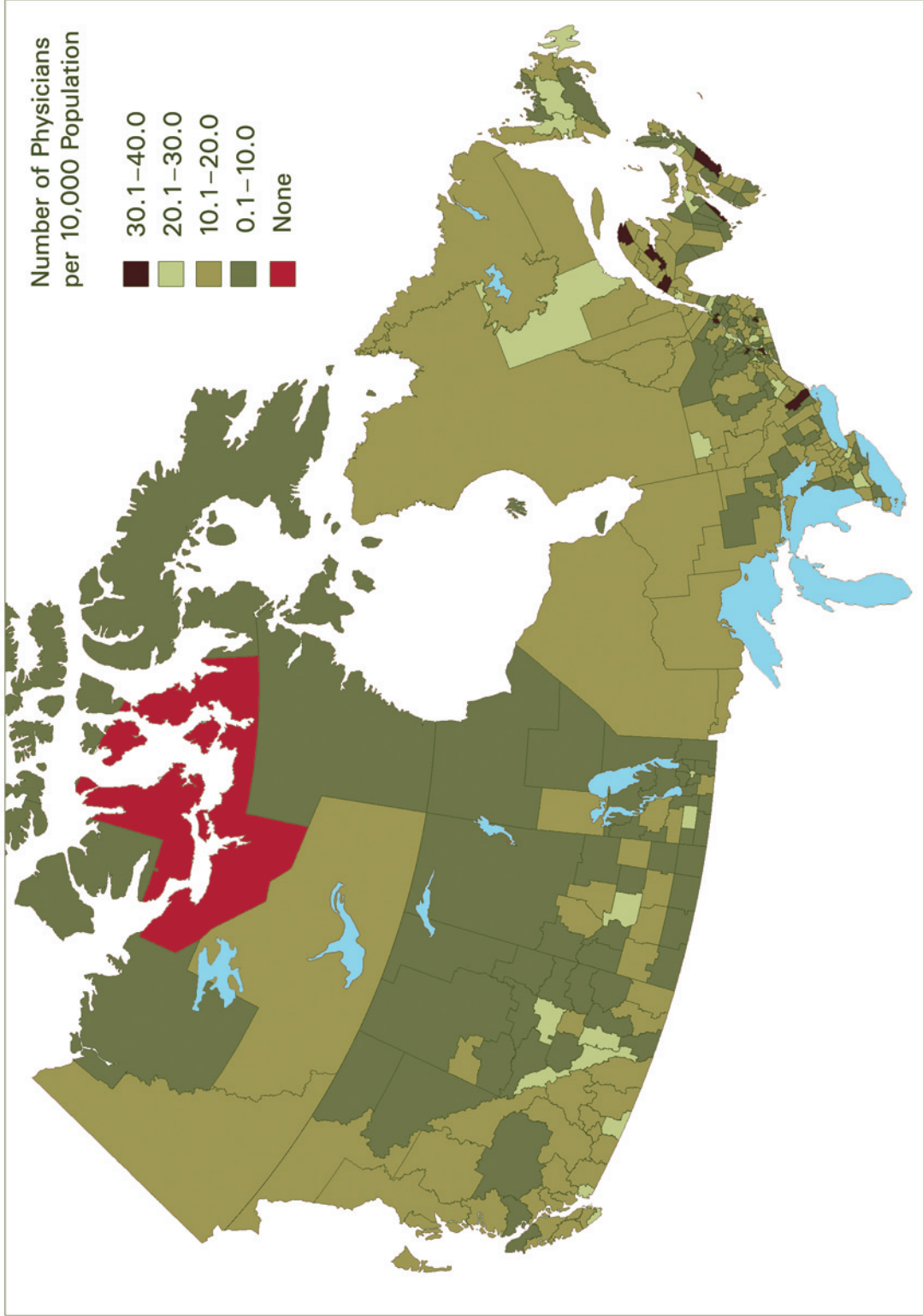
Sources: 2004 Population Estimates, Statistics Canada; SMDB, CIHI.

Figure 12. Number of Family Medicine Physicians per 10,000 Population Mapped by Census Division, Canada, 2004

Number of Family
Medicine Physicians
per 10,000 Population

- 15.1–30.0
- 10.1–15.0
- 5.1–10.0
- 0.1–5.0
- None
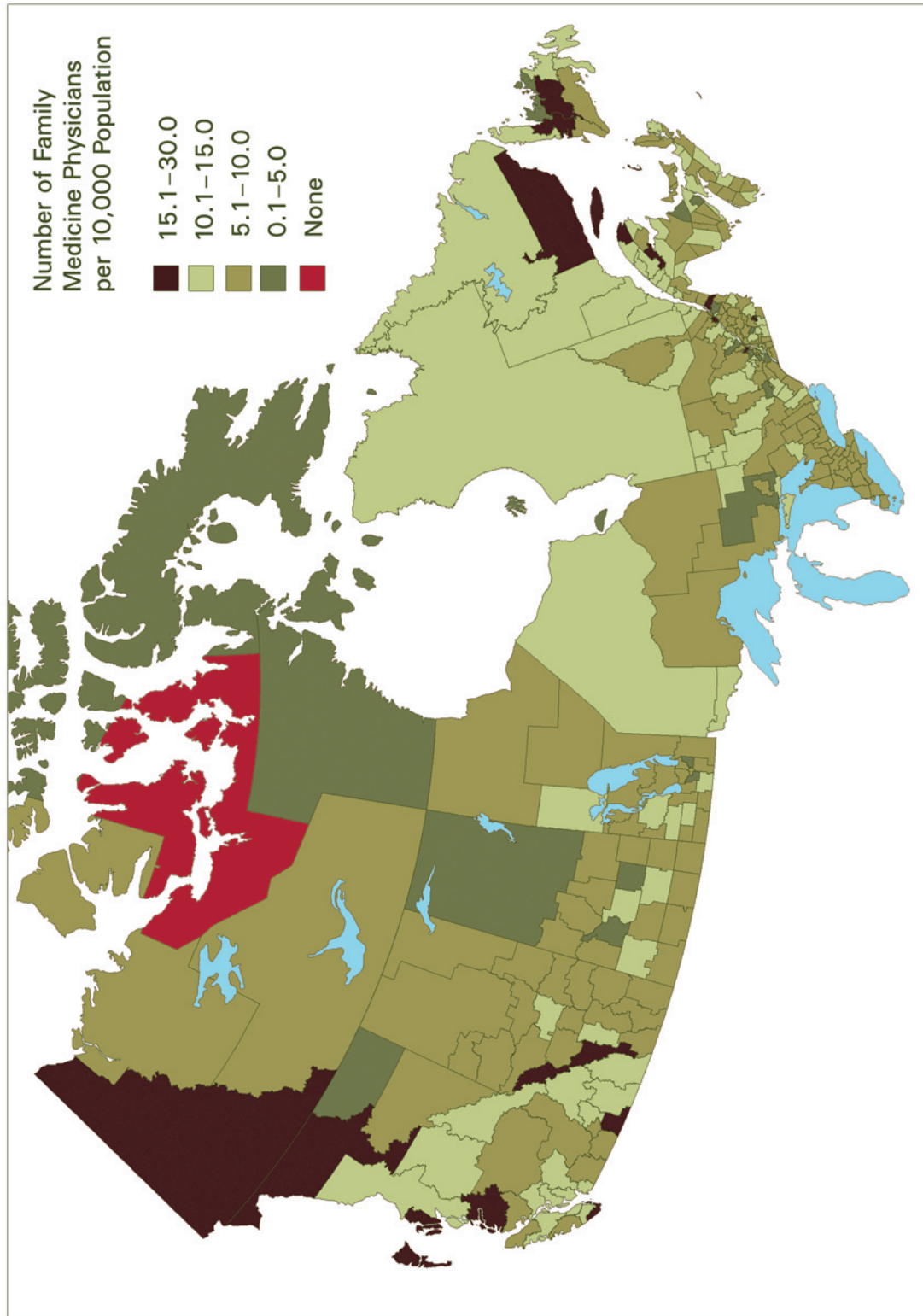
Note: "Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists (see section 2.2 for details).
Sources: 2004 Population Estimates, Statistics Canada; SMDB, CIHI.

Figure 13. **Number of Specialist Physicians per 10,000 Population Mapped by Census Division, Canada, 2004**
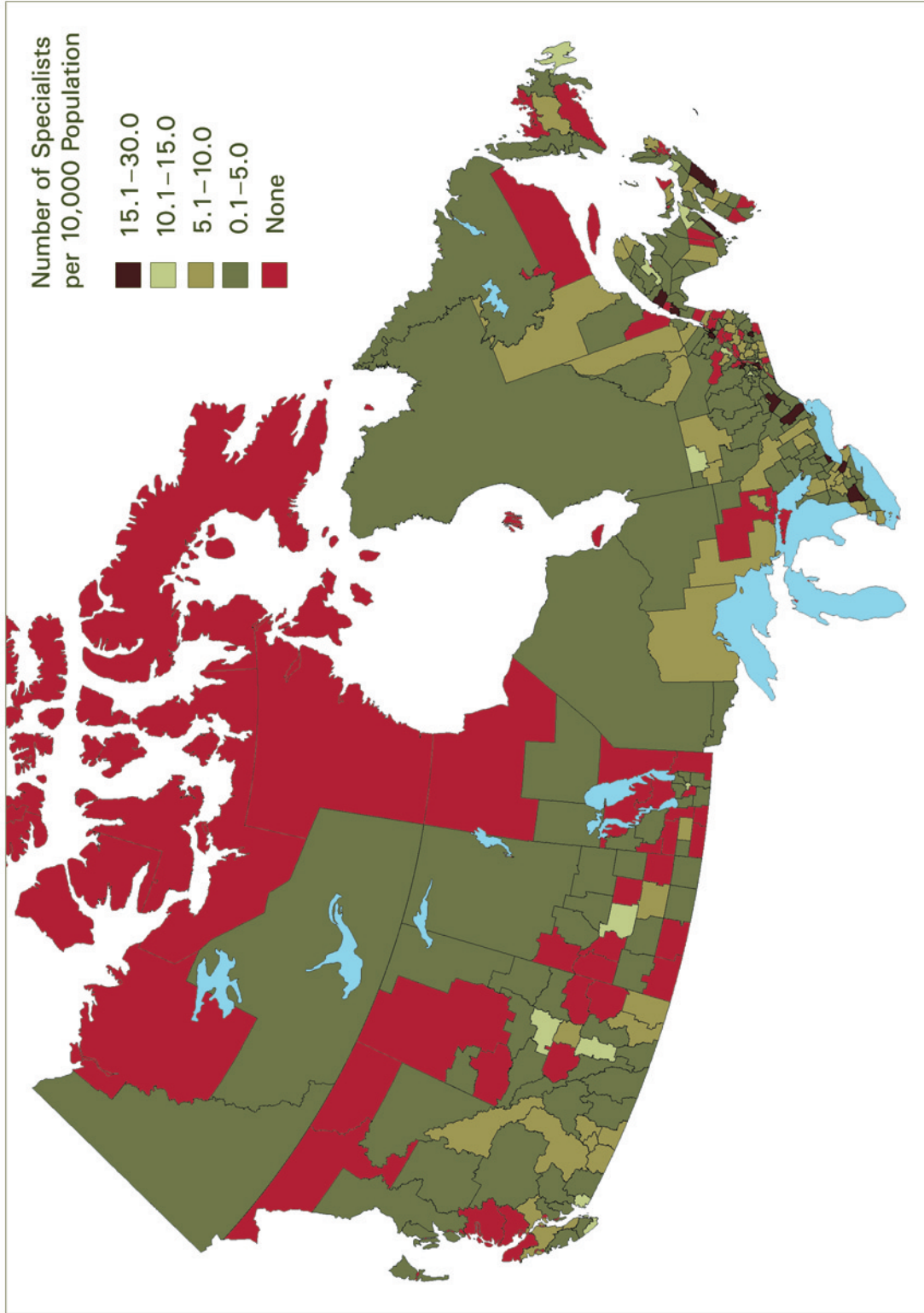
Number of Specialists
per 10,000 Population

15.1–30.0
10.1–15.0
5.1–10.0
0.1–5.0
None

3.6   Distance Measurements

Population in many small towns and rural or remote communities in Canada is far away from major urban centres where health care providers, facilities, technologies and services concentrate. Travelling to larger urban centres for the purpose of accessing health care is a fact of life for many rural Canadians. Thus, distances can be used as a proxy indicator of unequal distributions of health care providers or services.

While distance may be measured in many ways (for example, time equivalents), the data available for this study permit only the measurement of straight-line distances. As indicated in Chapter 2, distances were computed from the locations of the general population to the nearest physician, specialist and two categories of hospitals.

Figure 14 shows the average distance that Canadians have to travel to the nearest physician for the majority of the urban–rural categories of communities. The overall average is 3.4 kilometres, increasing from less than 1 kilometre in the largest urban centres to 10.4 kilometres in weak MIZ communities. Left out of that diagram, because of very high values, are the average distances for no MIZ communities (33.5 kilometres) and the territories (201.6 kilometres). Considering that these are population-weighted averages, the steep increase in distances that have to be travelled when one lives outside even the smallest of our urban centres is tremendous.

The average distances to the nearest specialists, specific specialists and hospitals, regardless of the community size, are even greater than those shown in Figure 14. Ranges of the distance magnitude are shown in Table G.7 for each of the urban–rural categories.

Figure 14.   Average Distance to the Nearest Physician by Urban–Rural Category, Canada, 2004
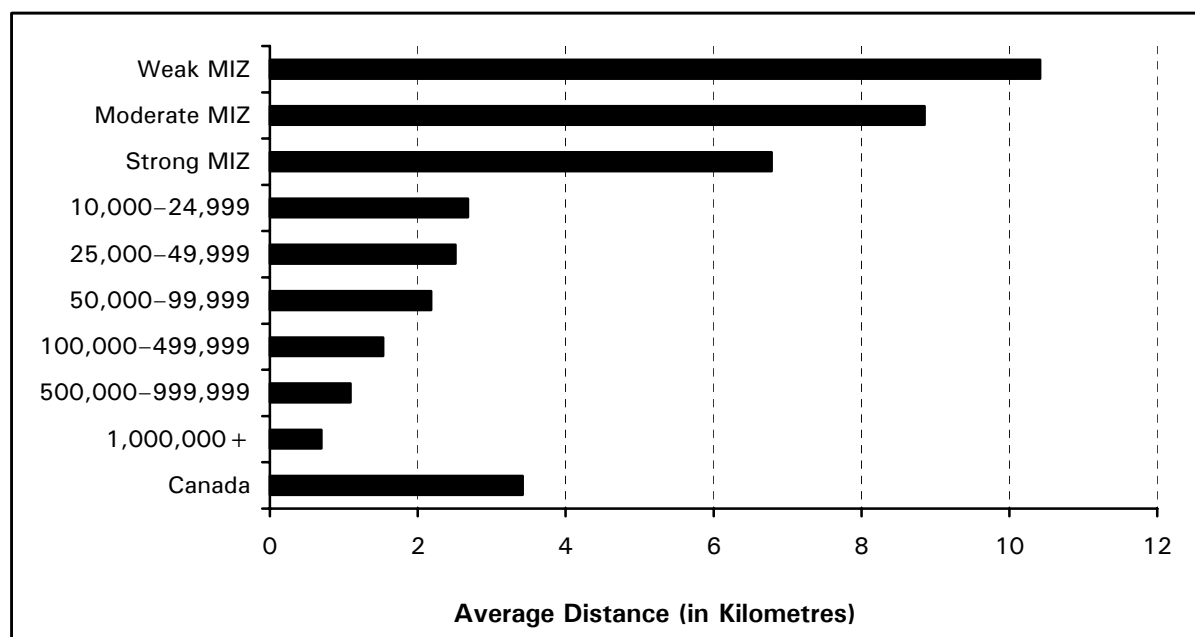
Sources: 2001 Census, Statistics Canada; SMDB, CIHI.

3.7 Revising Physician Counts: Full-Time Equivalents

The influences of sex, age and physician type on the workload of physicians are examined here in order to determine their impacts on the regional variations in physician supply or counts.[§] Workload is expressed in terms of full-time equivalents (see Chapter 2) derived from the 2002 National Physician Database (NPDB).

3.7.1 Full-Time Equivalent by Sex

The average full-time equivalent (FTE) for Canada's FFS physicians in 2002 was equal to 0.83. For female and male physicians, the overall average FTE was 0.69 and 0.89, respectively. Figure 15 shows the variation in average FTE values by province. These average values range from the lowest in Nova Scotia to the highest FTE values in Ontario. In Nova Scotia, with an overall FTE value of 0.69, the average FTE value for female physicians was 0.59, compared with a value of 0.74 for male physicians. The average FTE values in Ontario were 0.74 (female physicians), 0.96 (male physicians) and 0.90 (overall average). As Figure 15 illustrates for each province and for Canada, the overall (males and females) average FTE value and the average FTE value for male physicians are very similar. Given the differences in average FTE values for female and male physicians, this is due primarily to the fact that the majority (70.3%) of FFS physicians are male.

Figure 15. Average Full-Time Equivalent Value for Fee-for-Service Physicians by Sex and Province, Canada, 2002
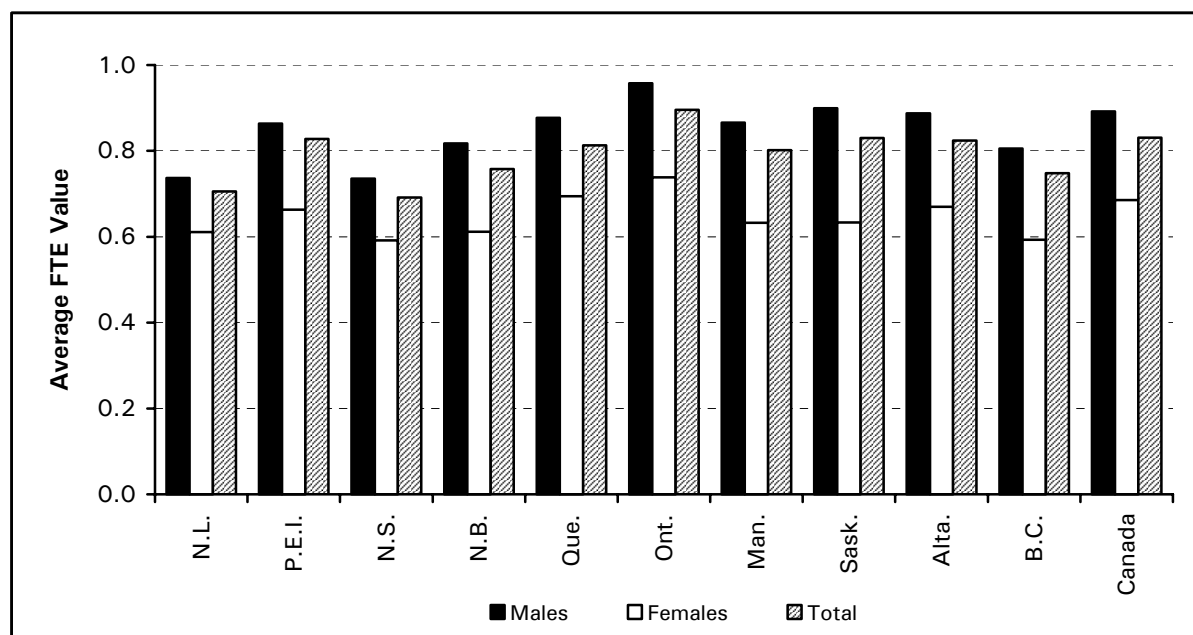
Source: NPDB, CIHI.

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§ When analyzing physician FTE results, it is important to note certain limitations inherent in the NPDB. At present the NPDB contains primarily fee-for-service payment information. It does not contain alternative payment information. As such, NPDB FTE results are based exclusively on physician payments that stem from fee-for-service activity and exclude physician work activity that is remunerated through alternative payment plans. This limitation will have a larger impact on FTE results for physician groups that receive a relatively larger proportion of their income from alternative payment sources, including possibly rural physicians and physicians in younger age cohorts. For further discussion, please see section 5.2.

3.7.2 Full-Time Equivalent by Age

Young physicians, for the most part, are just beginning to build up a practice and may not be receiving sufficient FFS payments to generate large FTE values. At the other end of the age spectrum, older physicians may reduce their medical practice activities, resulting in a decrease in FTE values. As well, lifestyle choices may also be reflected in the average FTE values associated with age distribution, with some physicians now working fewer hours than those in the past.[24]

These patterns are illustrated in Figure 16, where it is shown that the lowest average FTE values are associated with physicians who are less than 35 years of age, and the next-lowest average FTEs are associated with physicians who are 65 years of age or older. Male physicians tend to generate their highest average FTE value (0.98) in the 45-to-49, 50-to-54 and 55-to-59 year age groups, and then the average FTE value begins to decline in the 60-to-64 year age group. Female physicians generate their highest average FTE (0.79) slightly later, in the 55-to-59 year age group. This could be associated with lower workload for female physicians during child-rearing years.[13, 24]

Additional details showing average FTE value by age group and for each province are included in Table G.8 in Appendix G.

Figure 16.   Average Full-Time Equivalent Value for Fee-for-Service Physicians by Age Group and Sex, Canada, 2002
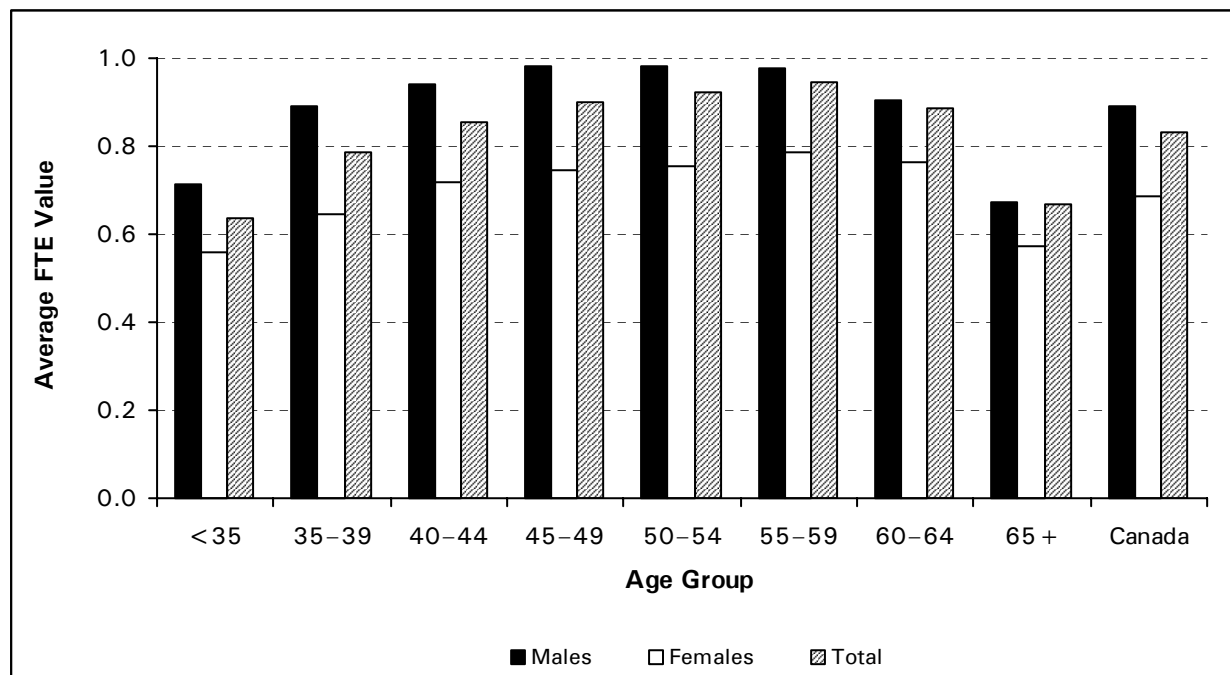
Source: NPDB, CIHI.

3.7.3 Full-Time Equivalent by Physician Specialty

In addition to sex and age, the overall average FTE value for Canada's FFS physicians is influenced by the specialty they belong to. Some of the differences in average FTE by specialty are shown in Figure 17.

In general, ophthalmologists generate the highest average FTE (0.91), with physicians in several other specialties (for example, physical medicine, psychiatry, plastic surgery and urology) not too far behind. The lowest average FTE values shown in Figure 17 are for those specializing in neurosurgery (0.78), pediatrics (0.80), orthopedic surgery (0.81), general surgery (0.81) and family medicine (0.81). Some of the urban–rural variations in the average FTE values for these specialties can be found in Table G.10 and are discussed below.

Figure 17.   Average Full-Time Equivalent Value for Fee-For-Service Physicians by Specialty, Canada, 2002
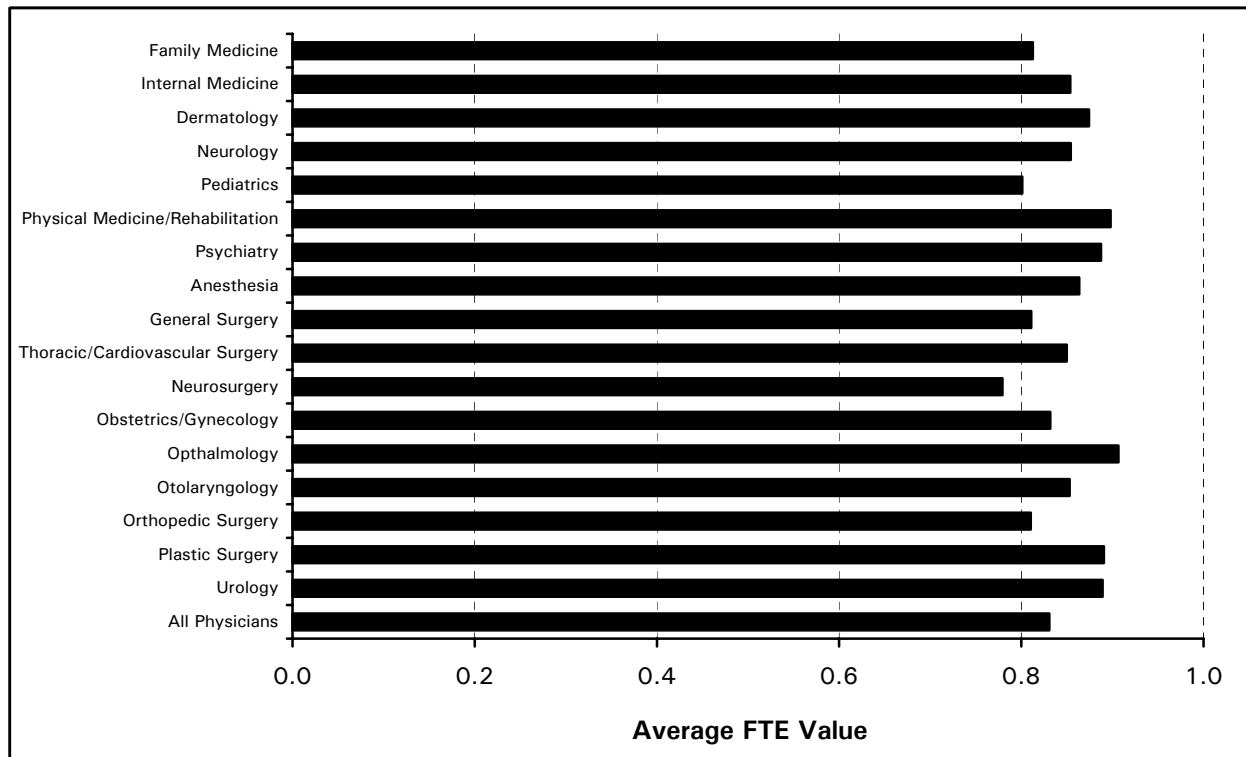
Source: NPDB, CIHI.

3.7.4 Impacts of Full-Time Equivalents on Physician Counts

In Appendix G, Tables G.9 to G.11 show some of the differences in physician head and FTE counts by specialty for each of the urban–rural categories. Table G.9 shows 2002 NPDB head counts by specialty and urban–rural category, Table G.10 lists the average FTE values for the same categories and Table G.11 identifies the resulting FTE-adjusted physician counts.

In 2002, there were 53,148 individual physicians receiving FFS payments (Table G.9). But their FTE workload levels (Table G.10) would produce the equivalent of only 44,150 physicians (Table G.11). This represents an overall reduction of 16.9% in the "actual" number of FFS physicians in Canada. Although varying somewhat by specialty, the general pattern in those tables indicates reduced average FTE values in rural communities compared with urban communities.

For all rural physicians taken together, average FTE values decrease from strong to no MIZ communities. For family physicians, average FTE values are 0.85, 0.75, 0.72 and 0.69 for strong, moderate, weak, and no MIZ communities, respectively. That pattern holds for all rural physicians taken together, but does not necessarily hold for all types of specialists in rural Canada. For instance, general surgeons in moderate MIZ communities have a higher average FTE value (0.71) than those in strong MIZ communities with an average FTE value of 0.52.

Similar decreasing patterns in average FTE values by community size are not as apparent for FFS physicians in urban areas. Family physicians in the largest urban centres (with a million inhabitants or more) have an average FTE value of 0.86, but this value drops to 0.75 in communities with 500,000 to 999,999 inhabitants. Then the reverse of the rural pattern occurs, with average FTE values increasing with decreasing community size. Interestingly, for most specialties, the highest average FTE values occur in mid-sized to small urban communities.

To further illustrate the impact of FTE values, Figures 18a and 18b plot physician-to-population (per 10,000) ratios by province and for Canada, using the head counts as well as head counts adjusted by average FTE values. Figure 18a was constructed using the 2002 NPDB head counts (number of physicians with fee-for-service payments) and FTE-adjusted counts (number of physicians with fee-for-service payments weighted by the average FTE values in Table G.8), as well as 2002 population estimates. Figure 18b was constructed in a similar manner, but using the 2004 SMDB head counts (number of active physicians, see Table 1) and 2004 population estimates. The adjusted physician-to-population ratios in Figure 18b are hypothetical, computed by assuming that the average FTE values generated using the 2002 NPDB could be applied to the 2004 SMDB data. That is, the SMDB FTE-adjusted physician counts are calculated by weighting the number of active physicians (Table 1) by the average FTE values shown in Table G.8.

Nova Scotia is the province with the lowest average FTE value (0.69). Consequently, the unadjusted 2002 NPDB FFS overall physician-to-population ratio of 16.1 physicians per 10,000 population would be reduced to an FTE-adjusted ratio of 11.2 (Figure 18a). Ontario, on the other hand, shows the least reduction, with ratio values of 16.9 and 15.1 for unadjusted and FTE-adjusted NPDB values, respectively. If it is appropriate to apply the

FTE values to non-FFS physicians as well as to FFS physicians, then these same patterns would hold for those same provinces using 2004 SMDB data. Thus, the actual physician-to-population ratio of 21.3 physicians per 10,000 population based on 2004 SMDB head counts for Nova Scotia would be reduced to a value of 14.8 (Figure 18b). Similarly, the physician-to-population ratio for Ontario would be least affected, being reduced from 17.7 to 16.2, based on SMDB head counts and hypothetical FTE-adjusted values, respectively (Figure 18b).

Whether one uses data from the NPDB or the SMDB, both head counts and FTE-adjusted counts indicate that the distribution of physicians in Canada does not correspond to the distribution of the population. That is the case at the provincial/territorial level, but it is considerably magnified when one examines distributions using sub-provincial geographical units of analysis. FTE-adjusted counts may be a better reflection of actual physician supply than head counts, as the former are a more realistic indication of the provision of medical services. If so, the rural areas of Canada are even more underserved than are shown by head counts or physician-to-population ratios based on head counts. However, these FTE values are based on FFS billing data only and do not tell us about the differences in practice characteristics that may exist within and between urban and rural areas of the country. Some of these differences are explored in the next chapter, which focuses on the urban–rural differences in medical practice activities of family physicians.

Figure 18a. Physician-to-Population Ratios by Province, Comparing Total Physician Counts With FTE-Adjusted Counts, Canada, 2002
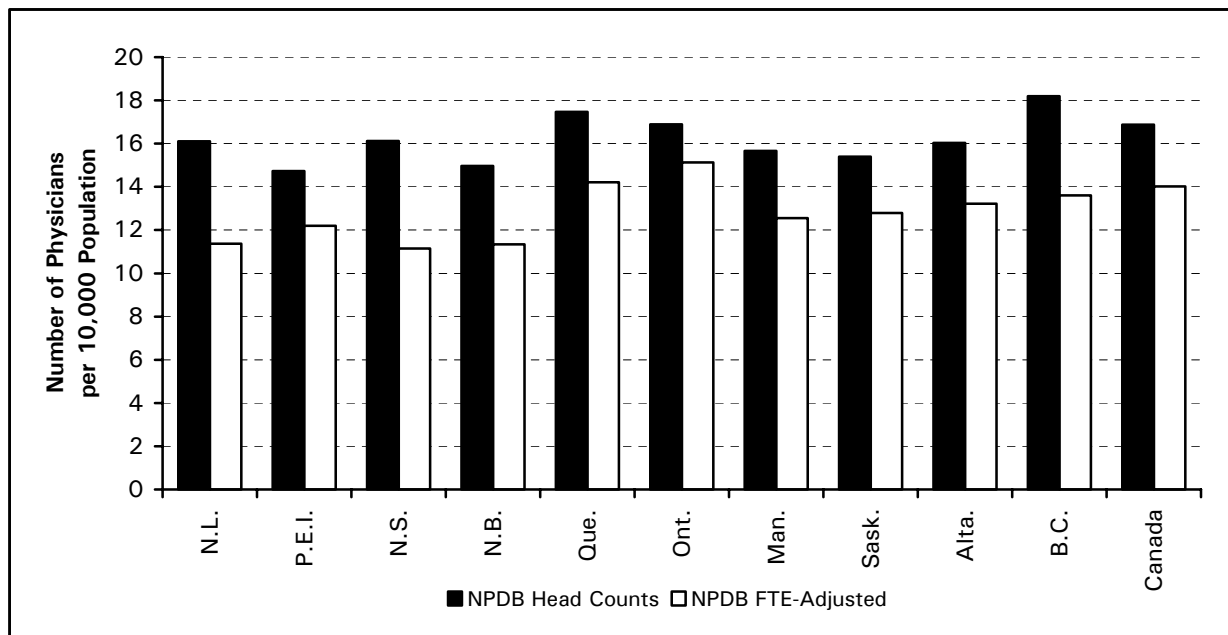
Sources: 2002 Population Estimates, Statistics Canada; NPDB, CIHI.

Figure 18b. Physician-to-Population Ratios by Province, Comparing Total Physician Counts With FTE-Adjusted Counts, Canada, 2004
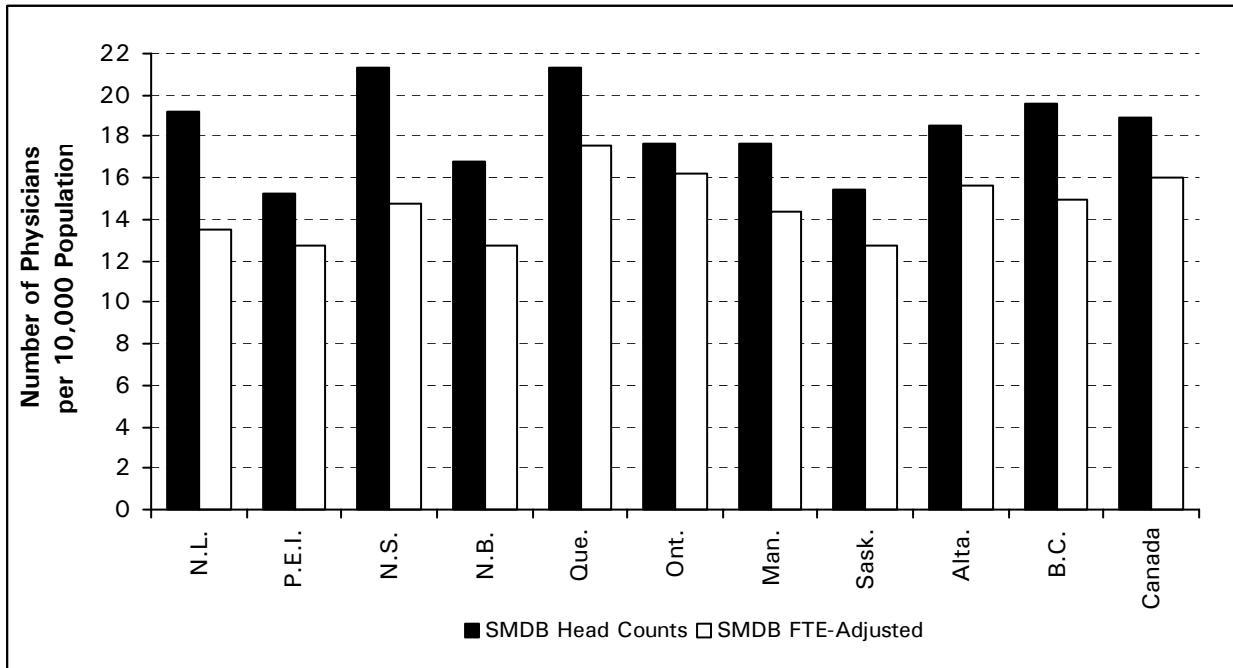
Note:
Adjusted counts are hypothetical, based on the average FTE values from the 2002 NPDB.

Sources: 2004 Population Estimates, Statistics Canada; SMDB and NPDB, CIHI.

4. Differences in Practice Characteristics Between Urban and Rural Family Physicians

As noted in Chapter 1, a discussion of geographic distribution imbalances in the medical workforce would not be complete without an examination of variation in practice characteristics of physicians, particularly family physicians, who work in different types of communities.

It has been suggested that although specialists such as internists, obstetricians, pediatricians and surgeons are few and far between in non-urban areas, rural family physicians have filled some of the service gaps by performing certain clinical tasks that typically would have been done by specialists in major urban centres. This could be regarded as a form of specialty substitution.[††] Thus, while this does not alter the specialist-to-population ratios in rural areas, it does help to attenuate, to some extent, service access difficulties faced by many rural residents.

There is also evidence that family physicians are responsive to the medical care needs of their communities. In a study of open and closed practices, Woodward and Pong have found that family physicians tend to keep their practices open when medical care, such as access to emergency departments, is less available. Similarly, family physicians in rural or remote areas are much less likely than those in cities or places near urban centres to close their practices, possibly because rural residents have fewer medical care options.[27] Similar findings have been reported by the Canadian Institute for Health Information (CIHI).[28]

The objective of this chapter is to show, using data from the family physician component of the 2004 National Physician Survey (NPS), the extent to which family physicians in different types of rural areas have broader scopes of medical practice than their urban counterparts—and what all this implies. It should be noted that the term "scope of practice," as used in this report, refers to the range of services physicians offer to their patients. It does not refer to the legal definition of what physicians are authorized—subject to the terms, conditions and limitations imposed on their certificate of registration—to perform. As pointed out previously, the focus on family physicians is due to the fact that the vast majority of rural physicians are family physicians.

[††] Noting that there are some overlaps in the scopes of practice between different specialties within medicine and between different health disciplines, Pitblado and Pong have distinguished between specialty substitution and discipline substitution.[1, 7] The former refers to physicians in one specialty (for example, family medicine) doing some of the work typically considered to be within the scope of practice of another specialty (such as pediatrics). The latter refers to practitioners of one discipline (optometry, for example) doing some of the work typically considered to be the practice domain of another discipline (such as medicine). This is because the boundaries separating health disciplines and specialties within medicine are somewhat permeable.

The following questions have been posed:

- Do rural family physicians and urban family physicians differ with respect to areas of medical practice?

- Do rural family physicians differ from their urban counterparts with respect to clinical procedures performed?

- What changes in scope of practice have occurred in the recent past and what changes can be expected in the foreseeable future?

- Are there urban–rural differences in such self-reported changes?

The survey data that may help answer these questions are presented in this chapter as bar graphs. Because of the smaller number of survey respondents (particularly in the rural community categories), the 11 urban–rural geographic categories that have been used in Chapter 3 have been collapsed into 6 categories as follows (with examples associated with each category).

Urban Communities

- 1,000,000 and more inhabitants (Montréal, Que.; Toronto, Ont.; Vancouver, B.C.)

- 100,000 to 999,999 inhabitants (Calgary, Alta.; Halifax, N.S.; Victoria, B.C.; Winnipeg, Man.)

- 10,000 to 99,999 inhabitants (Grand Falls–Windsor, N.L.; Kamloops, B.C.; Moose Jaw, Sask.; Yellowknife, N.W.T.)

Rural Communities

- Strong metropolitan influence zone or MIZ (Conception Harbour, N.L.; Escuminac, Que.; Stirling, Alta.)

- Moderate MIZ (Cardigan, P.E.I.; Gananoque, Ont.; Kimberley, B.C.)

- Weak MIZ/no MIZ/Territories (Grand Manan, N.B.; Lunenburg, N.S.; Minton, Sask.; Norman Wells, N.W.T.)

Non-responses have been excluded in calculating the percentages. A set of statistical tables corresponding to the bar graphs can be found in Appendix G (Tables G.12 and G.13).

4.1 Urban−Rural Differences in Family Physicians' Scope of Practice

Urban- and rural-based family physicians do not differ in every aspect with respect to practice characteristics. For certain types of service, such as providing primary care to families, adolescents and women, the differences in practice profile between physicians working in communities of different sizes are relatively minor (see Figures 19 to 21). Most family physicians, regardless of where they work, provide primary care or engage in general or family practice. On the other hand, only about a third of family physicians do preventive medicine, and only about 40% do psychotherapy or counselling, again, regardless of their locations of practice. However, with respect to some aspects of medical practice, where physicians work does make a difference.

Areas of Practice Where There Are No Substantial Differences Between Urban and Rural Family Physicians, Canada, 2004

Figure 19. Primary Care Practice of Family Physicians by Urban−Rural Category, Canada, 2004
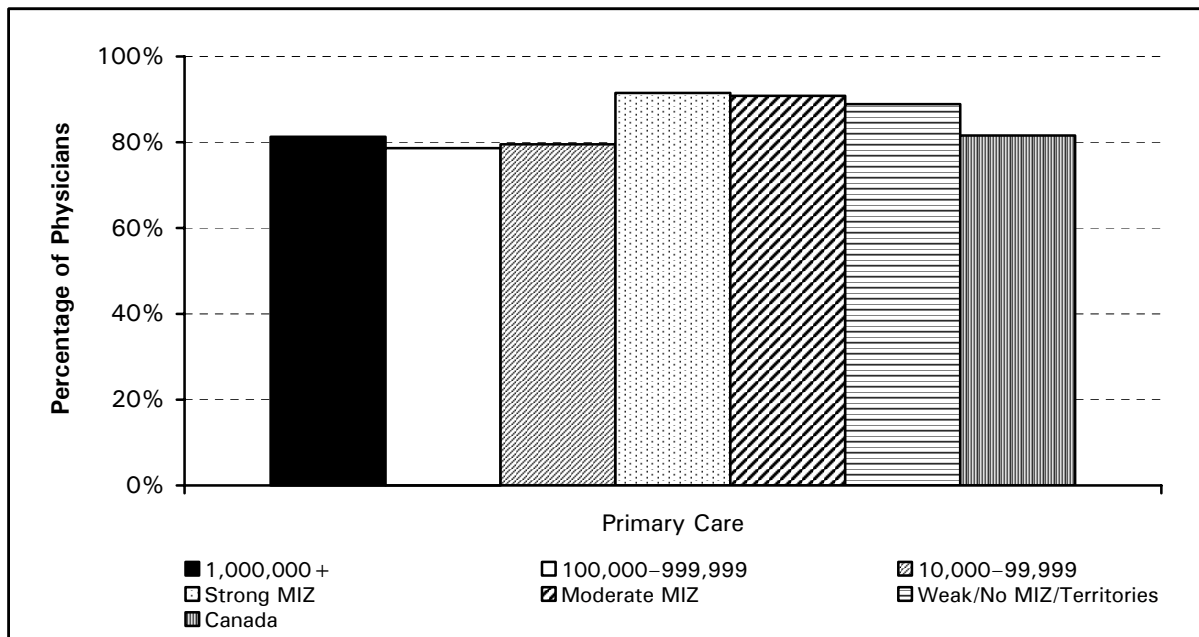
Source: 2004 NPS, College of Family Physicians of Canada, Canadian Medical Association and Royal College of Physicians and Surgeons of Canada.

Figure 20.   Adolescent Medicine and Women's Health Care Practice of Family Physicians by Urban–Rural Category, Canada, 2004
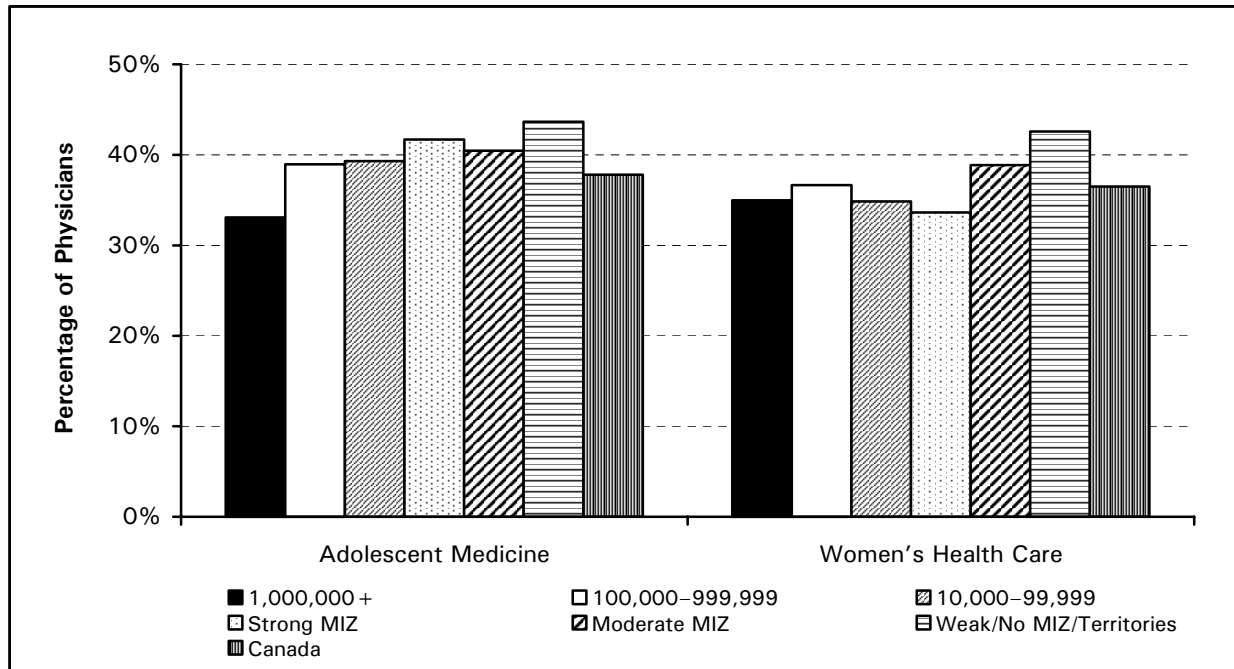
Figure 21.   Preventive Medicine and Psychotherapy/Counselling Practice of Family Physicians by Urban–Rural Category, Canada, 2004
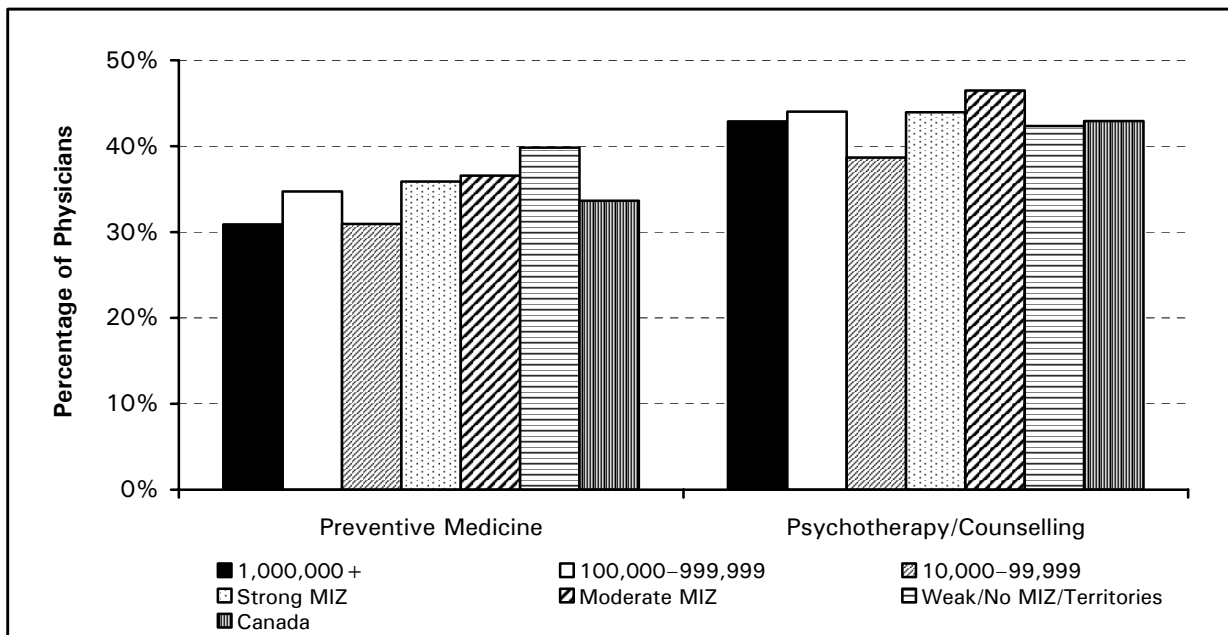
Figures 22 to 24 provide some examples that show considerable differences between rural family physicians and those in urban centres with respect to areas of practice. Typically, rural-based physicians are much more likely than their urban counterparts to engage in these areas of practice. For instance, whereas just less than 20% of family physicians in metropolitan areas with a million or more inhabitants provide cancer care to their patients, slightly more than 40% of physicians in more remote rural communities (that is, communities in the moderate, weak or no MIZ categories) provide cancer care. This may be due to the fact that cancer specialists are typically non-existent in small and remote communities (see Table 2a) and commuting to distant cities is often difficult or impractical for some cancer patients. As a result, some local family physicians step in to fill the service gaps. Another example is emergency medicine, where about 74% of physicians in remote rural communities work in emergency departments, compared to only 15% of family physicians in centres with more than a million people. In smaller communities, family physicians are likely to be the only medical practitioners available, and they therefore assume the responsibility for providing emergency medical care.

Areas of Practice Where There Are Substantial Differences Between Urban and Rural Family Physicians, Canada, 2004

Figure 22.   Cancer Care/Oncology, Cardiology and Chronic Disease Management Practice of Family Physicians by Urban–Rural Category, Canada, 2004
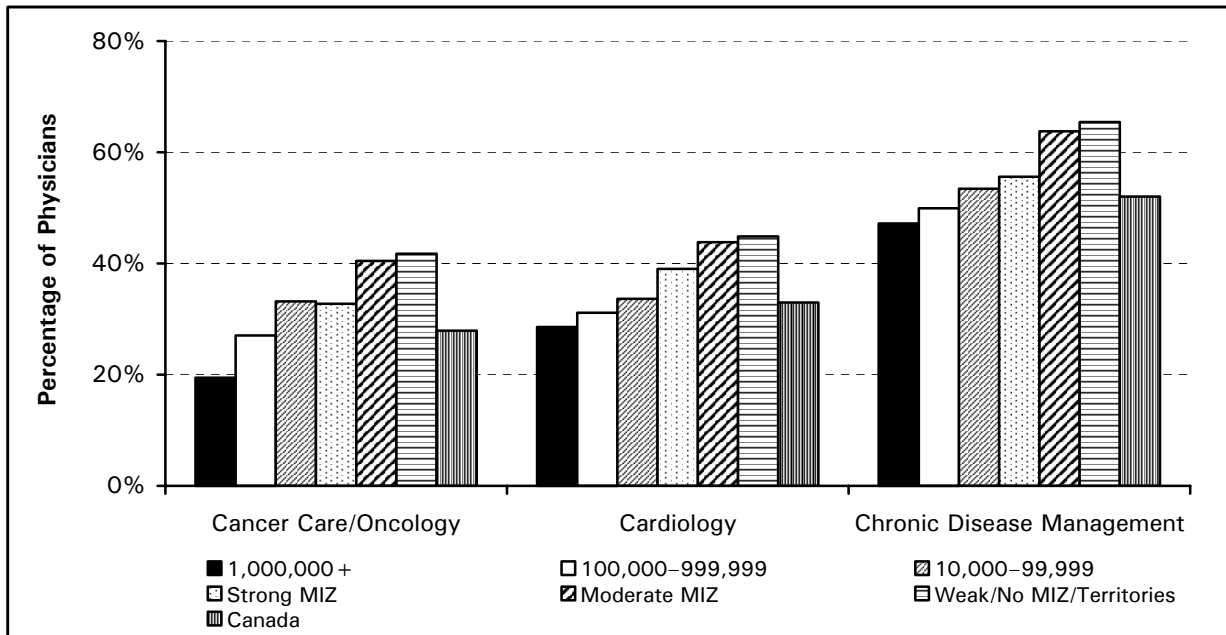
Source: 2004 NPS, College of Family Physicians of Canada, Canadian Medical Association and Royal College of Physicians and Surgeons of Canada.

Figure 23. **Geriatric Medicine, Palliative Care and Home Care Practice of Family Physicians by Urban−Rural Category, Canada, 2004**
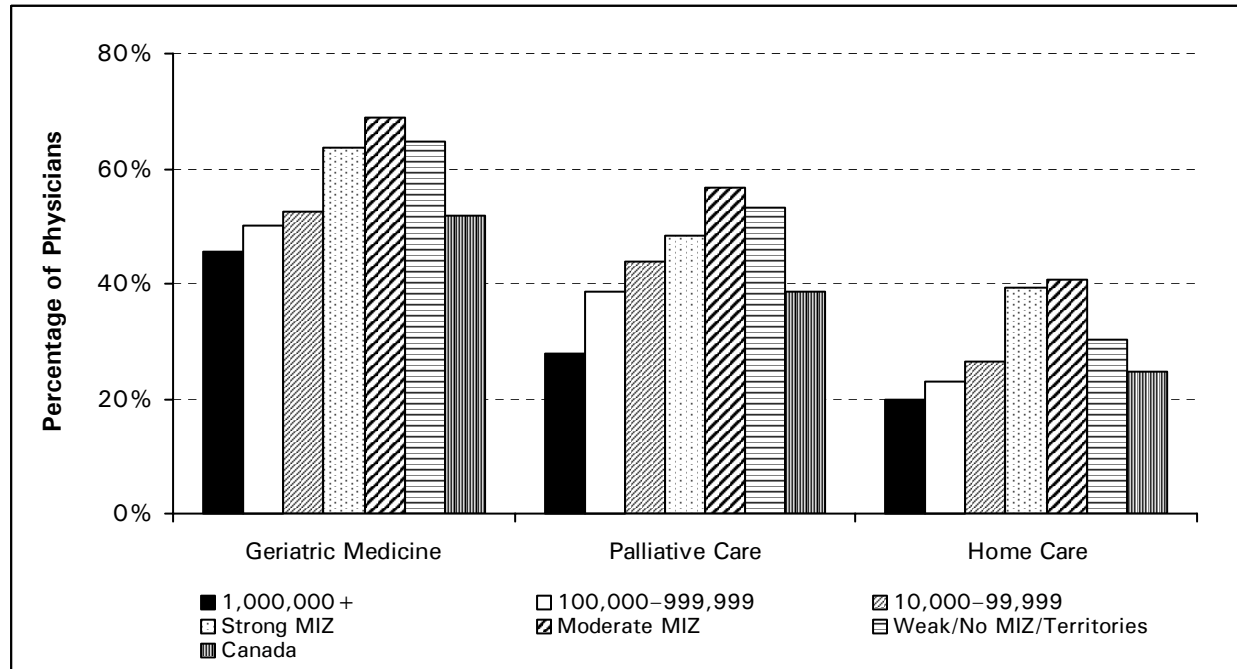
Figure 24. **Emergency Medicine, Hospitalist Care and Surgical Assisting Practice of Family Physicians by Urban−Rural Category, Canada, 2004**
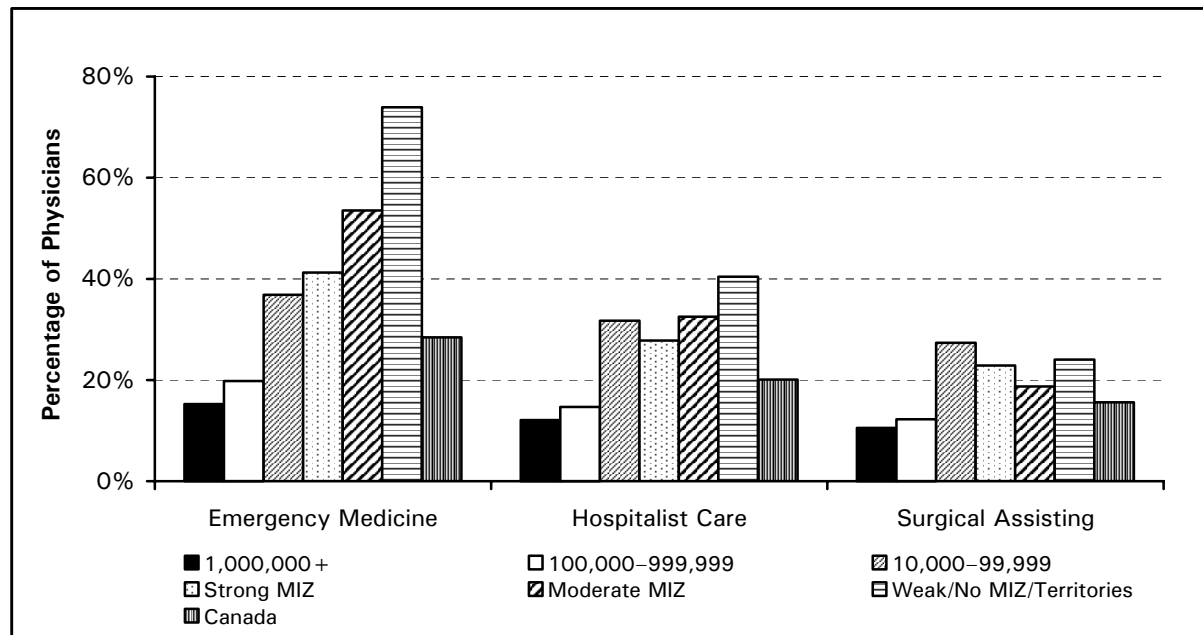
The bar graphs also show that, generally speaking, there is an inverse relationship between the size and remoteness of a community and the likelihood that a family physician will engage in one of these areas of practice. Also, with a few minor exceptions, the relationships are monotonic. In other words, the smaller the community and the farther away it is from an urban centre, the more likely its family physicians will engage in chronic disease management, geriatric medicine, palliative care, surgical assistance and so forth.

Figures 25 and 26 present additional evidence concerning the inverse relationship between "ruralness" and scope of practice. In the area of maternity and newborn care, one can also observe an inverse and mostly monotonic relationship between the size and remoteness of a community and the likelihood that a family physician will engage in such services as prenatal, intrapartum and newborn care. For instance, less than 40% of family physicians in the largest metropolitan areas provide postpartum care, but 65% of family physicians in the most rural areas do. It is known that fewer family physicians deliver babies, possibly for a variety of reasons.[12] Thus, less than 10% of those in the largest urban centres provide intrapartum care, but close to a third of those who practise in the most rural and remote communities do.

Other Areas of Practice With Substantial Differences Between Urban and Rural Family Physicians: Maternity and Newborn Care, Canada, 2004

Figure 25. Prenatal/Antenatal Care and Intrapartum Care Practice of Family Physicians by Urban−Rural Category, Canada, 2004
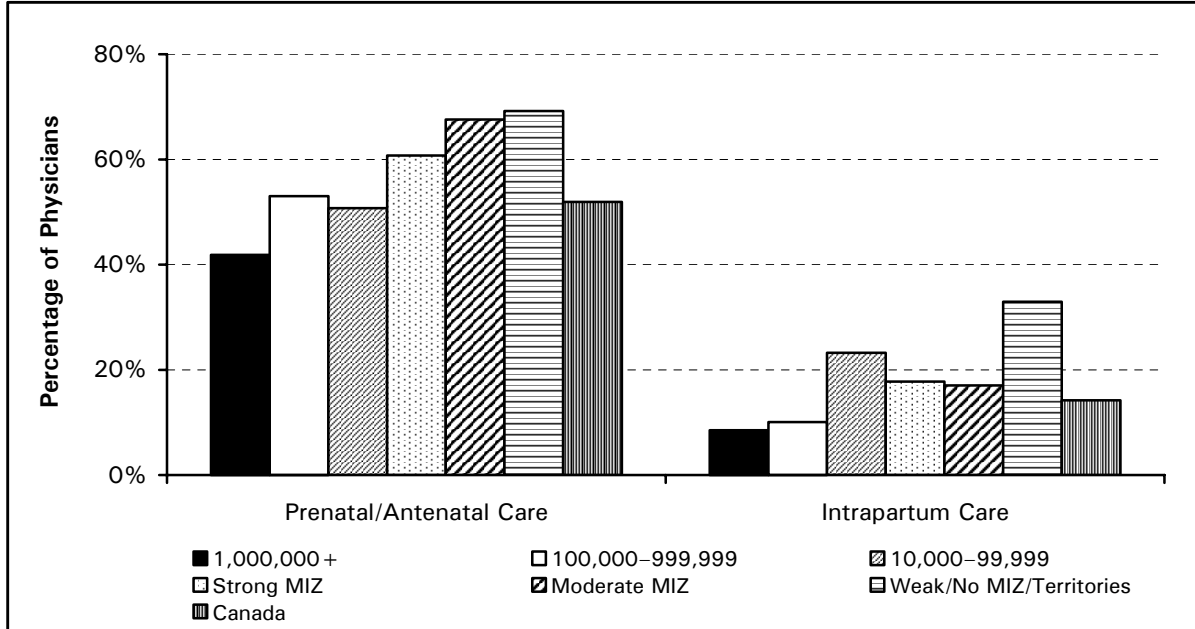
Source: 2004 NPS, College of Family Physicians of Canada, Canadian Medical Association and Royal College of Physicians and Surgeons of Canada.

Figure 26.   Postpartum Care and Newborn Care Practice of Family Physicians by Urban–Rural Category, Canada, 2004
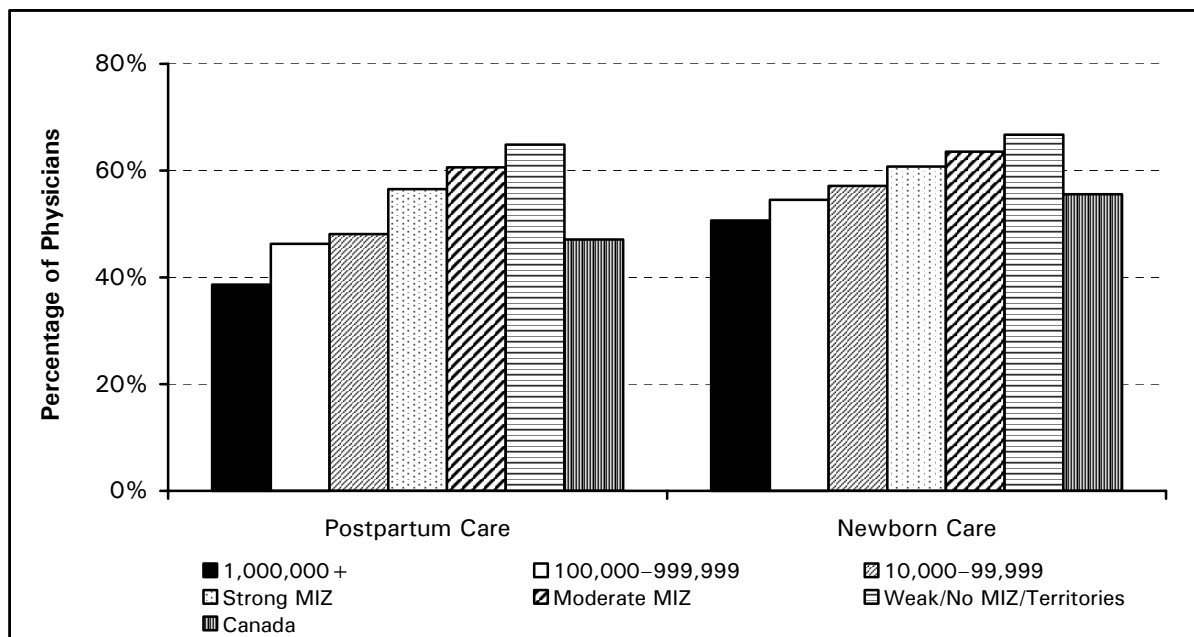
4.2   Urban–Rural Differences in Family Physicians' Clinical Procedures

As in areas of practice, self-reported data from the 2004 NPS show that family physicians who work in the most rural and remote communities are the most likely to do a wide range of clinical procedures. Figures 27 to 29 show some examples. For instance, whereas 28% of physicians in metropolitan areas with a million or more inhabitants do casting and splinting, 83% of physicians practising in the most rural and remote communities engage in such clinical procedures. Again, the data show a reverse and mostly monotonic relationship between size and remoteness of a community and the likelihood that a family physician will engage in procedures such as aspiration/injection of joints, lumbar puncture and skin biopsy. These results are in accord with the findings of the Working Group on Procedural Skills of the College of Family Physicians of Canada, whose task is to define a set of core procedural skills for family medicine training. The Working Group on Procedural Skills has found that ". . . rural and small-town family physicians perform more procedures in their practices."[29]

Differences Between Urban and Rural Family Physicians in Relation to Clinical Procedures, Canada, 2004

Figure 27.   Aspiration/Injection of Joints and Casting/Splinting Procedures of Family Physicians by Urban–Rural Category, Canada, 2004
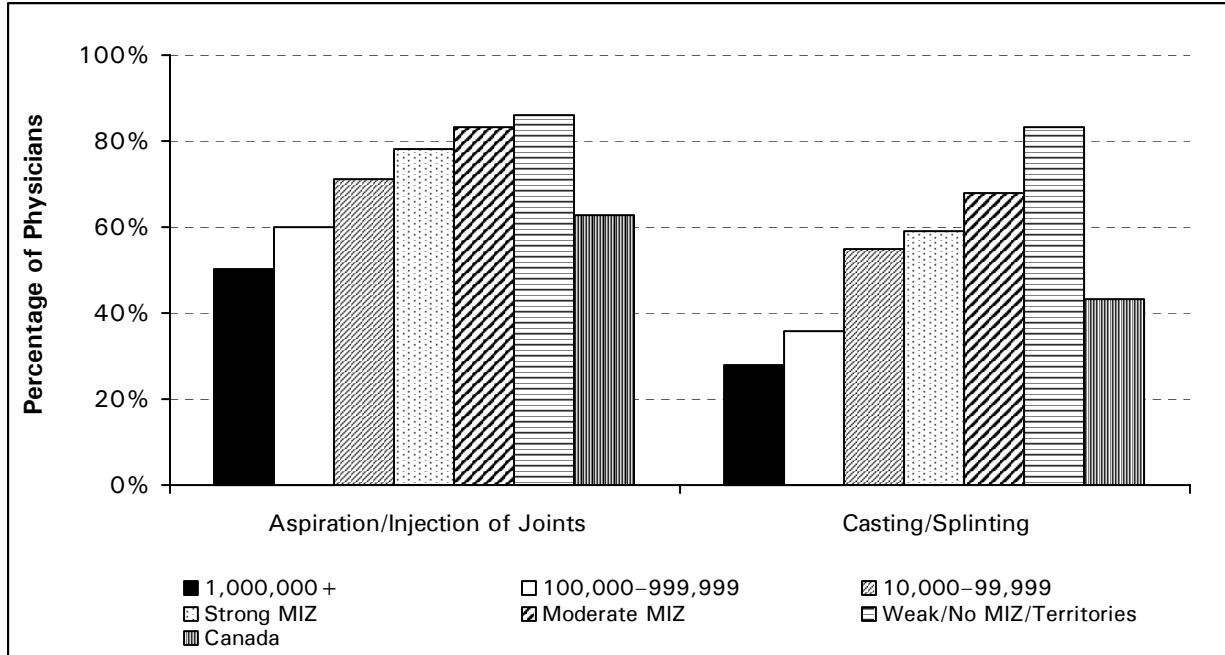
Figure 28.   Endometrial Aspiration and Lumbar Puncture Procedures of Family Physicians by Urban–Rural Category, Canada, 2004
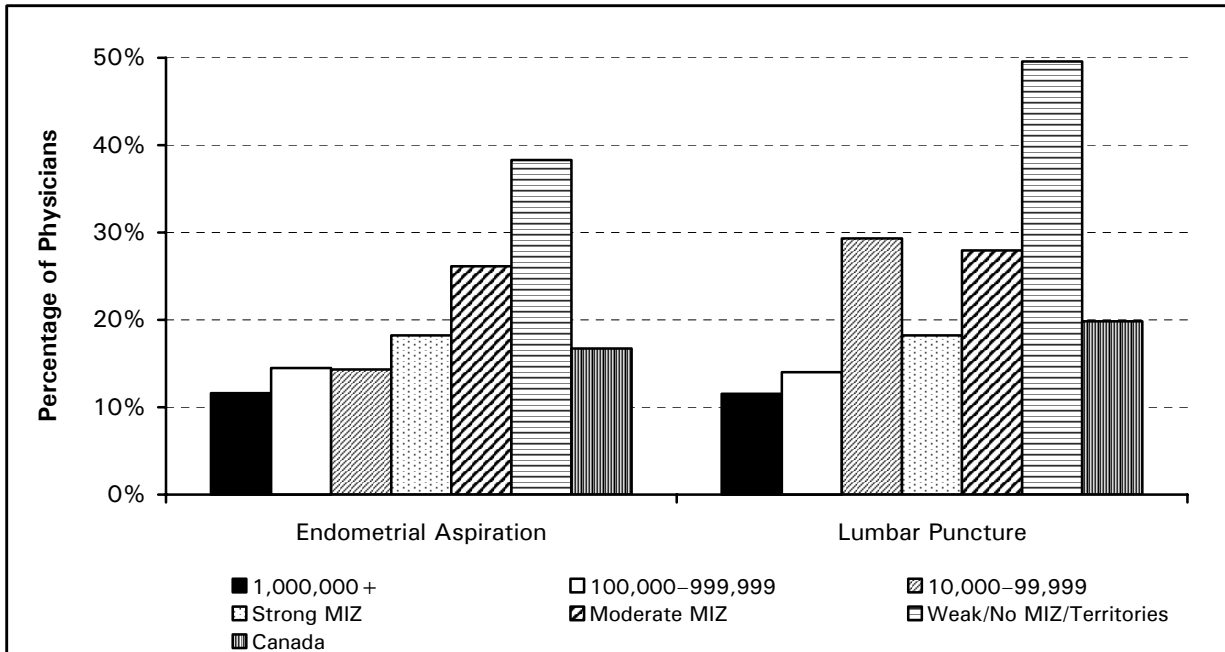
Figure 29.   Removal of Superficial Skin Lesions, Skin Biopsy and Toenail Surgery Procedures of Family Physicians by Urban−Rural Category, Canada, 2004
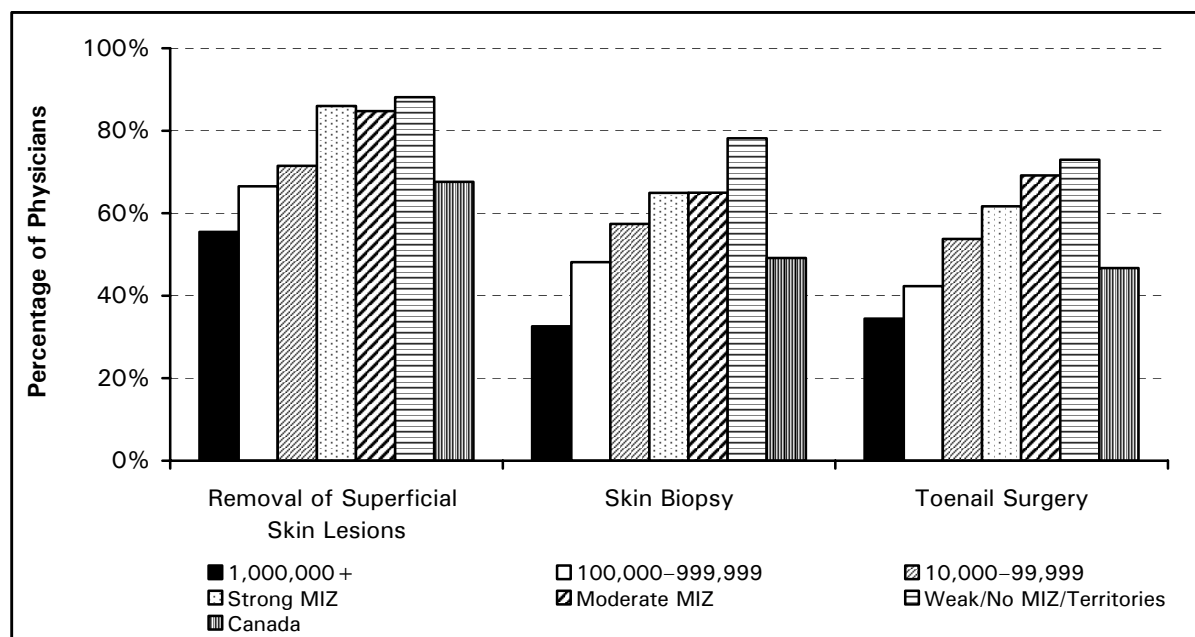
Data from the 2004 NPS show that, by and large, rural family physicians have a much broader scope of practice, in comparison with their urban counterparts. Rural physicians are more likely to work in a variety of care settings like hospitals, nursing homes and patients' homes, rather than just working in their offices or clinics. They are also more likely to engage in clinical tasks that most likely would have been done by specialists in an urban setting. To a certain extent, they are substituting for specialists that are few and far between in rural and more remote locations. By having a wider scope of practice and by providing a broader range of services, rural family physicians help attenuate the adverse effects of having few specialists in rural areas and help make some medical services more accessible to rural Canadians.

A study by Hutten-Czapski, Pitblado and Slade, based on data from the 1997 National Family Physician Survey, has reported very similar findings.[30] According to these authors, as geographic isolation grows and as population size decreases, Canadian family physicians provide an increasingly broad spectrum of medical services. Likewise, analysis of data from the 2001 National Family Physician Survey by Hogenbirk and associates shows more or less the same results.[31, 32] In other words, three national surveys of family physicians conducted in 1997, 2001 and 2004 have revealed similar relationships between community size and remoteness on the one hand and scope of practice on the other. In addition, studies by other authors (for example, Chan and Tepper), using administrative rather than survey data, have also reported similar results.[12, 24]

4.3 Changes and Anticipated Changes to Scope of Practice

Studies by Chan[24] and Tepper[12] have documented a trend of declining comprehensiveness of services provided by family physicians. The latter study has shown that the percentages of family physicians providing services requiring advanced procedural skills, surgical services and obstetrical services, to name just a few, declined from 1992 to 2001. Furthermore, the findings show that in some types of service, the rate of decline is happening faster among rural family physicians than among urban family physicians.

Figure 30 shows the percentage of family physicians who reported that they had expanded or reduced their scope of practice in the two-year period prior to the 2004 NPS, by urban–rural category. The figure also shows the percentage of family physicians who indicated whether or not they had specialized in an area of medical practice by urban–rural category, for the same period. Specializing in an area of medical practice is likely to have an effect similar to narrowing one's scope of practice. Figure 31, on the other hand, shows the percentage of family physicians who reportedly planned to reduce or expand their scope of practice in the next two years following the 2004 NPS, by urban–rural category. It also shows the percentage of family physicians who similarly indicated whether or not they planned to specialize in an area of medical practice by urban–rural category, for the same time.

Self-Reported Changes to the Scope of Practice of Family Physicians, Canada, 2004

Figure 30. Changes Made to Practice of Family Physicians in the Last Two Years by Urban–Rural Category, Canada, 2004
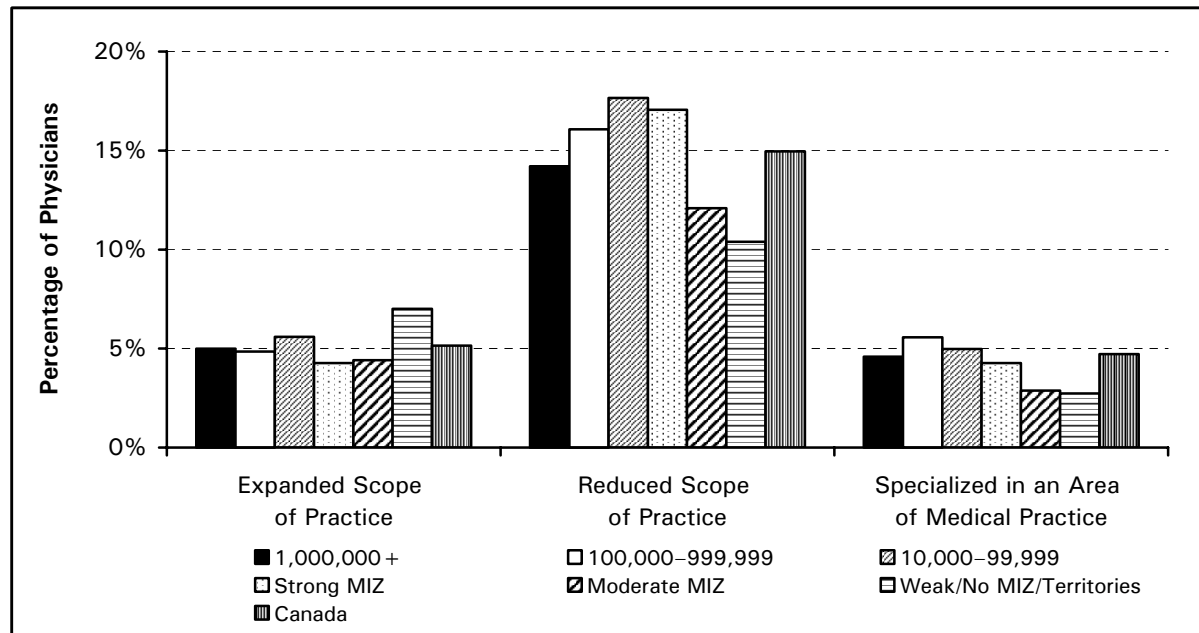
Source: 2004 NPS, College of Family Physicians of Canada, Canadian Medical Association and Royal College of Physicians and Surgeons of Canada.

Figure 31. Planned Changes to Practice of Family Physicians in the Next Two Years by Urban–Rural Category, Canada, 2004
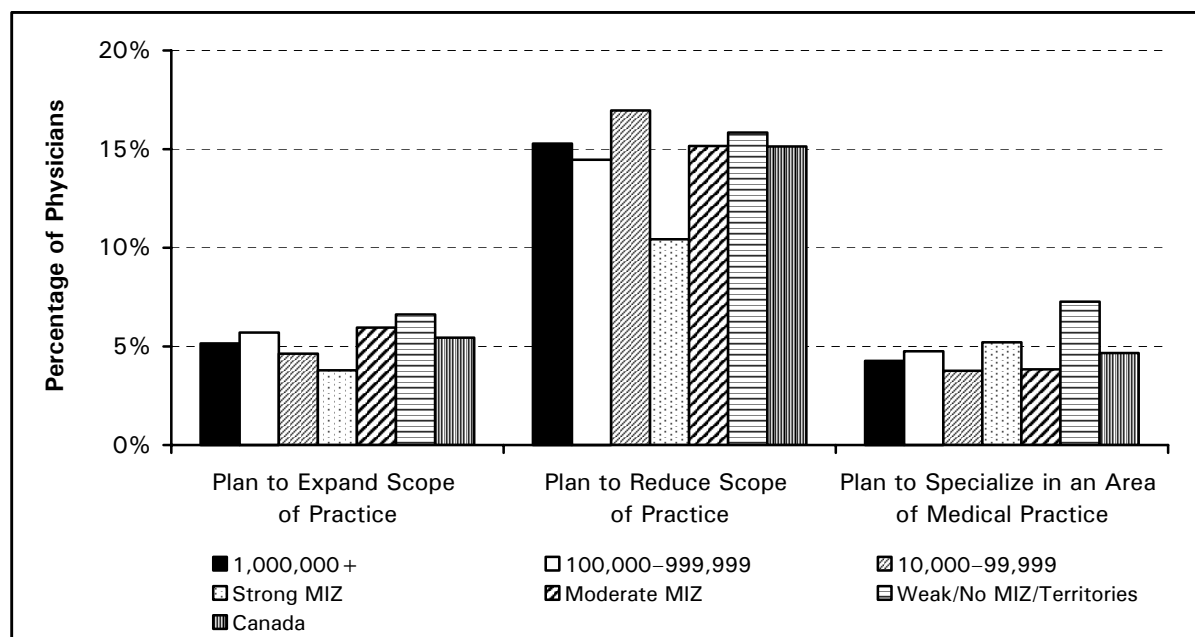
Two things are worth noting. First, there are no substantial urban–rural differences in self-reported changes in scope of practice or specialization. Family physicians in communities of all sizes reported similar levels of change or anticipated change in practice pattern. Second, the percentage of family physicians who reported a reduction in their scope of practice in the past two years was considerably larger than the percentage of family physicians who reported a broadening of their scope of practice. Similarly, the percentage of family physicians who planned to limit their scope of practice was considerably larger than the percentage of family physicians who planned to expand their practice scope. Additionally, a small percentage of family physicians planned to specialize in an area of medical practice like sports medicine or addiction medicine.

These self-reported changes in practice are similar to trends reported by other researchers who have studied physician practice patterns using secondary administrative data. For instance, Chan and Schultz have shown that in Ontario, the proportions of family physicians working in emergency departments, inpatient hospital wards or long-term care facilities, or performing obstetrical deliveries, house-calls or minor surgical procedures, have declined steadily from 1993–1994 to 2001–2002.[13] Thus, findings based on survey data are highly consistent with those based on administrative data. Declining comprehensiveness in practice among rural family physicians could mean that even fewer services may be available locally in rural Canada in the future.

5.   Summary and Discussion

This study is an attempt to analyze the latest available data from various sources on the spatial distribution of physicians relative to that of the Canadian population. It represents an update and extension of an earlier work by Pitblado and Pong.[1]

The analytical framework adopted by this study is based on the belief that in examining how physicians are distributed geographically, it is not enough to count the number of medical practitioners in each community, region or province/territory. Physician-to-population ratio—the most widely used measure that is largely based on head counts—should be seen as the point of departure, rather than the final statement, in the discourse on physician distribution.

To this end, this study has paid special attention to regional and urban–rural differences in terms of the demographic characteristics of the medical workforce, physician workload and practice characteristics of family physicians. In short, who the physicians are, how much they do and what they do are also important issues. In relation to "who the physicians are," the study compared physicians located in communities of different sizes in terms of some demographic features such as sex, age and language. With respect to "how much they do," it documented not just the number of physicians, but also the number of full-time equivalents (FTEs) by taking workload into consideration. To take into account "what they do," it compared urban family physicians with their rural counterparts with respect to practice characteristics.

5.1   Major Findings

The following highlights the major findings from the data analyses reported in Chapters 3 and 4.

Mapping of Canada's Physicians
- In comparison to the distribution of the general population, Canadian physicians are more concentrated in urban areas and this is particularly evident for specialists. Just less than 16% of family physicians and only 2.4% of specialists were located in rural and small town Canada (using the Statistics Canada definition of rural), where 21.1% of the population resided in 2004.

- In 2004, only 9.4% of all physicians were located in rural areas, compared with 21.1% of Canadians. These figures differ little from the 1996 figures of 9.8% and 22.2%, respectively. In other words, the situation at the national level has not changed markedly during the eight-year period.

- Comparing the distribution of all physicians to that of the general population across census divisions results in a Gini coefficient of G = 0.25. The proportional distribution of family physicians across census divisions bears greater resemblance to that of the general population (G = 0.15). However, there is greater discordance between where people live and where physicians practise when specialties like emergency medicine (G = 0.58), psychiatry (G = 0.46), orthopedic surgery (G = 0.37) and obstetrics and gynecology (G = 0.36) are examined.

- Mapping results show that residents of some rural communities can be more than 100 kilometres (or several hundred kilometres, for the territories) away from the nearest specialist physician, including obstetricians, pediatricians and general surgeons.

Sex Distribution
- In urban areas, only 44.0% of male physicians are in family or general practice, compared with 55.9% of female physicians. In rural areas, 85.8% of male physicians and 91.3% of female physicians are in family or general practice.

Age Distribution
- For urban physicians, the average age decreases with the decreasing size of urban communities. This trend is particularly evident for female physicians, as their average age in the largest centres is 45.0 years, decreasing to 42.0 years in the smallest urban centres. In rural areas, the average age of physicians decreases along with decreasing metropolitan influence. For male physicians, the average age in strong metropolitan influence zone (MIZ) communities is 52.2 years, compared with an average age of 47.8 years in no MIZ communities.

Language Composition
- Not surprisingly, French is the predominant language (83.0%) for physicians in Quebec. But simple provincial/territorial analysis may hide intra-provincial/territorial variations. The high percentage of French-speaking physicians in communities with a population of 25,000 to 49,999 (40.7%) and in no MIZ communities (44.9%) may reflect concentrations of francophone populations and physicians in such regions as northern Ontario and rural Manitoba.

International Medical Graduates
- Nationally, the percentage of international medical graduates (IMGs) continued to decline somewhat over the last few years, from 23.1% in 2000 to 22.6% in 2003 to 22.3% in 2004. In 2004, IMGs accounted for 26.3% of all physicians in rural Canada, compared with 21.9% in urban areas. Also, IMGs accounted for 26.9% of family physicians in rural areas, compared with 22.6% in urban areas. In other words, there is a heavier reliance on foreign-trained physicians in rural Canada.

Revising Physician Counts: Full-Time Equivalents
- In 2002, the average FTE value for fee-for-service (FFS) physicians was equal to 0.83. For female and male physicians, the average FTE was 0.69 and 0.89, respectively.

- With respect to age groups, in 2002, average FTE ranged from 0.63 for physicians less than 35 years to 0.94 for physicians aged 55 to 59. Among male physicians, average FTE is highest (0.98) in the 45-to-49, 50-to-54 and 55-to-59 age groups. For females, average FTE is highest (0.79) in the 55-to-59 age group.

- Ophthalmologists generated the highest average FTE (0.91) in 2002. FTE values were comparatively lower for neurosurgeons (0.78), pediatricians (0.80), orthopedic surgeons (0.81), general surgeons (0.81) and family physicians (0.81).

- Using physician FTE values, this study shows that, while there were 53,148 physicians receiving FFS payments in 2002, there were only 44,150 FTE physicians in Canada—representing a difference of 16.9% in the "actual" number of FFS physicians in Canada.

Practice Characteristics of Urban and Rural Family Physicians

- Family physicians in rural and urban areas tend to have different practice characteristics. More specifically, rural family physicians are more likely to have a broader scope of practice and perform a broader range of clinical procedures. The findings reported in Chapter 4 are consistent with results based on other national surveys of Canadian family physicians and from other studies that are based on secondary administrative data.

- With a few exceptions, the relationships between the size and remoteness of a community and physicians' scope of practice are monotonic. In other words, the smaller the community and the farther away it is from an urban centre, the more likely its family physicians have a broader scope of practice and perform a broader range of clinical procedures.

- It has been argued that by having a broader scope of practice and providing a broader range of clinical services, rural family physicians are, to a certain extent, filling a service gap created by the shortage of specialists in rural or remote regions of the country. This could be seen as a form of specialty substitution.

- Using head-count data and physician-to-population ratios from the Southam Medical Database (SMDB), this study confirms the common perception that physicians are not equally distributed in Canada, with rural areas having fewer family physicians and even fewer specialists per capita than urban areas. However, rural family physicians tend to have a broader scope of practice and provide a wider range of clinical services, which may help to lessen some of the difficulties in accessing medical care by rural Canadians.

- Although rural family physicians tend to have a broader scope of practice than their urban counterparts, several studies based on secondary administrative data have shown a declining comprehensiveness of practice by Canadian family physicians in the last decade or so. Using self-reported data on changes in the recent past and intended future changes in practice patterns, this study has confirmed the trend that family physicians, in both rural and urban areas, are more likely to reduce than to expand their scope of practice. The workforce and service implications of such a development for the future and for rural Canada deserve close attention.

5.2 Limitations of the Study and Future Research

This study has a number of limitations, some of which are methodological in nature. Although the use of FTEs in measuring physician supply is an important methodological advance, there are still gaps in how FTEs are derived. The National Physician Database, upon which FTE statistics are based, contains primarily fee-for-service payment information and lacks data on alternative payments. Recent reports show that a growing number of physicians are on alternative payment schemes and that alternative payments represent an increasing share of total physician payments.[33] There may also be differences in the way FFS and non-FFS physicians practise medicine.

The observation (in section 3.7.4) that in rural areas, average FTE values decrease from strong MIZ communities to no MIZ communities is intriguing and somewhat counter-intuitive. Since there are fewer physicians per capita in more rural areas, rural physicians may be expected to have heavier caseloads. As pointed out earlier, rural family physicians also tend to have a broader scope of practice than their urban counterparts. Finally, previously published results of the 2004 National Physician Survey indicate that rural family physicians report working more hours, on average, than their inner-city and urban colleagues.[34]

One possible explanation, as suggested by Hutten-Czapski, is the way FTEs are calculated.[35] Rural physicians are much more likely than urban physicians to be involved in hospital and emergency-department work. As a result, their office-based patient-contact activities, on the basis of which FTE values are estimated, may become relatively less significant in terms of volume. In other words, rural physicians' heavy involvement in secondary care in institutional settings may limit their work in office-based primary care. As well, at least in some provinces, rural physicians are more likely to be on alternative payment schemes, instead of being reimbursed by fee-for-services. If this is true, the way FTE values are currently derived may not adequately reflect the reality of rural medical practice. The issue of physicians in more rural areas having lower FTE values, as well as the way FTEs are calculated, deserves more in-depth examination.

Only family physician data and a limited number of variables from the 2004 National Physician Survey have been used in examining the differences between urban and rural family physicians with respect to their practice patterns. Also, the focus was solely on the national picture, and possible provincial/territorial differences have not been looked at. Furthermore, although the importance of rural family physicians having a broader scope of practice has been identified, the impact from the perspectives of the medical workforce and service access has not been quantified.

In previous works, Pitblado and Pong have pointed out a number of conceptual and methodological problems in using physician-to-population ratios for medical workforce planning and research.[1, 6, 7] These include:

- The artificial nature of the boundaries of geographical or administrative units, which may not reflect actual patterns of delivery and/or consumption of medical care;

- The untenable assumption that all medical care consumption and/or delivery activities take place within those boundaries and the disregard of cross-border travel behaviours in relation to the seeking and rendering of medical care; and

- In the construction of those ratios, the lack of recognition of such factors as regional variations in specialty mix, differences in physician workload, specialty and/or discipline substitution and health care needs of the population.

Although this study has tried to take into consideration such issues as differences in physician workload and scope of practice, it has not dealt with other problems that have previously been identified and that are commonly encountered in the examination of physician distribution. Such challenges will have to be tackled in future studies or by other researchers.

This report is mostly a descriptive study of where physicians are located in Canada, but there are many related issues that need to be addressed. For example, what are the factors influencing spatial distribution patterns? Why do physicians choose to locate in certain areas but not others? How and when are such decisions made? What policy levers or strategies could be used to shape physicians' practice location decisions? Answers to these and related questions could be important, as they may help decision-makers and health care planners deal with the issue of geographic maldistribution. A considerable amount of research has been done, but to date there are still no definitive answers to these questions—and definitive answers may not be possible as medical practice, the health care system and health policies are constantly evolving.

Similarly, this study has not discussed the implications of the declining comprehensiveness of family practice, particularly in rural areas. It is unclear at this time how the measured differences and changes in physicians' scope of practice relate to the health care needs of Canadians. As this study has suggested, in light of physician maldistribution, it may not be sufficient to simply increase the number of rural physicians. Further research will be required to better assess the relationship between changing practice scopes and population health needs in rural and urban places.

A perfect correspondence between the spatial distribution of medical practitioners and that of the general population—in other words, a Gini coefficient of 0—is most likely unachievable, especially in relation to specialists. But what is an acceptable level of distribution imbalance? What other factors need to be taken into account when developing policies or programs to deal with geographic maldistribution? For instance, should economic efficiency or clinical efficacy be considered? What resources and services should be centralized in order to make economic sense? What medical services can be decentralized without sacrificing quality of care? These are issues that require further research attention and policy debates.

Also, very little is known about the effects of maldistribution of health care resources, particularly health human resources. Does it have a negative impact on the health status of the population? Epidemiological evidence from many countries, including Canada, shows that people living in rural, remote or underserved areas tend to have poorer health status relative to residents in big cities. What is less clear is the extent to which poorer health status is attributable to distribution imbalances of health human resources in general and maldistribution of physicians in particular. Our current incomplete understanding of the matter suggests that maldistribution of health care providers, including physicians, is just one of many factors contributing to adverse health outcomes. A lot more work is needed to achieve a better understanding of this complex issue.

As noted in Chapter 3, the relationship between physician and population distributions has changed little between 1996 and 2004. However, many new developments are afoot, including emerging trends and new policies and programs. Examples include the continuing decline in interest in family medicine by new medical school graduates and the trend towards specialization and sub-specialization; increases in medical school enrolment and tuition fees in recent years; the opening of the new Northern Ontario School of Medicine (at Laurentian University and Lakehead University) and rural campuses of the University of British Columbia medical school, which are dedicated to training physicians to work in northern and rural areas; major initiatives to allow more international medical graduates to practise in Canada; primary care reforms in many parts of the country; increasing emphasis on group or interdisciplinary practice; new reimbursement models to replace FFS payment for physicians; and so forth. It is difficult enough to examine the effect of any one of these developments on physician distribution, assessing the combined impact of these changes would be a daunting task. Nevertheless, close monitoring of the situation is clearly a priority.

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Appendix A

List of Abbreviations

List of Abbreviations

BI Group   Business Information Group

CA   census agglomeration

CD   census division

CIHI   Canadian Institute for Health Information

CMA   census metropolitan area

CSD   census subdivision

DA   dissemination area

FFS   fee-for-service

FTE   full-time equivalent

IMG   international medical graduate

MIZ   metropolitan influence zone

MD   medical doctorate

NPDB   National Physician Database

NPS   National Physician Survey

PSBR   physician services benefit rates

SGC   Standard Geographic Classification

SMDB   Southam Medical Database

Appendix B

Technical Appendix

Technical Appendix

1. Gini Coefficients and the Lorenz Curve

Over the past century, a number of techniques have been developed to determine the "fair share" of the distribution of goods, services, income, health status and so forth. Many of these measures are based on an examination of what is known as a "Lorenz curve" and an associated measure known as the "Gini concentration ratio." The Lorenz curve is "a cumulative frequency curve that compares the distribution of a specific variable with the uniform distribution that represents equality. This equality distribution is represented as a diagonal line, and the greater the deviation of the Lorenz curve from this, the greater the inequality."[23]

This relationship is illustrated in Figure B.1 where, for the purpose of this study, data for geographical units are plotted with cumulative shares of the general population along the x-axis and cumulative shares of the target phenomenon (numbers of physicians) along the y-axis. The Lorenz curve is shown as a dashed line. As that dashed line moves further away from the solid diagonal line, the target phenomenon would be found to be concentrated in fewer and fewer geographical units, that is, unequally distributed. If the Lorenz curve coincides with the diagonal line, each geographical unit is considered to have a proportionately equal share of the target phenomenon relative to its share of the general population.

Figure B.1. An Example of a Lorenz Curve Plot
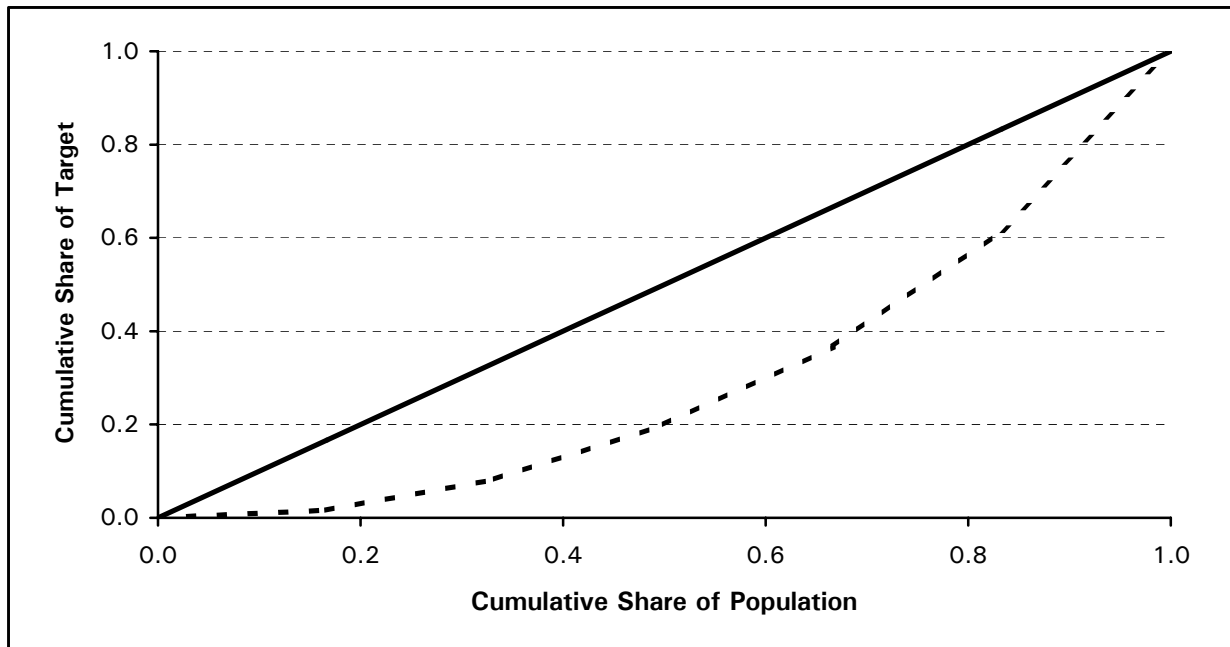
While Lorenz curve plots provide excellent graphical representations of proportional relationships, they may be cumbersome to present when a relatively large number of target phenomena are being examined. A single numerical value that summarizes the characteristics of these plots is often more useful. The Gini coefficient or, more correctly, the Gini concentration ratio (here designated as "G") "measures the area of concentration between the Lorenz curve and the line of perfect equality and expresses it as a proportion of the area enclosed by the triangle defined by the axes."[36] Numerous variations on the notations for expressing this ratio exist (see, for example, MacLachlan and Sawada; Wagstaff and van Doorslaer).[36, 37] Computations of the Gini concentration ratio for the present report were based on the formulation provided by Brown:[38]

$$G = 1 - \sum_{i=0}^{k-1} (Y_{i+1} + Y_i)(X_{i+1} - X_i)$$

Y = Cumulated proportion of the health variable
X = Cumulated proportion of the population variable
G = Gini coefficient

Here, the "health variable" is equated with numbers of physicians and the summation is performed over "k" geographical units. For this study, the computations of G followed the pattern employed for calculating physician-to-population ratios: two sets of geographical units—the provinces and territories (k = 13) and the census divisions of Canada (k = 288)—computed for all physicians and also for each physician specialty.

The Gini coefficient can range in value from 0 to 1. The value 0 represents perfect equality and corresponds to a Lorenz curve that coincides with the diagonal line at every point along the x-axis. The value 1 represents perfect inequality and corresponds to a Lorenz curve that forms a triangle with its hypotenuse along the diagonal and a right angle formed by the x-axis and the right-hand side of the graph.

2. Distance Measure

Access to health care providers or hospital services may be measured in many different ways. The measure employed in this study is the simple, straight-line distance between the locations of the general population and the nearest physician or hospital. Following Ng et al., distance is computed between two points whose locations are given by latitude and longitude using the following equation:[39]

D = {6,370,997*arcos[sin(LAT1)*sin(LAT2)+cos(LAT1)*cos(LAT2)*cos(LONG1-LONG2)]}/1,000

where: D   = distance in kilometres
            LAT1, LONG1   = latitude, longitude of one point (in radians)
            LAT2, LONG2   = latitude, longitude of second point (in radians)
            arcos   = arc cosine function
            sin   = sine function
            cos   = cosine function

The distance D was computed from each of the latitude/longitude locations of Canada's 52,993 dissemination areas to the nearest physician and to the nearest hospital. For physicians, the latitude/longitude locations are derived from the SMDB postal codes and nearest distances computed for all physicians in general or family practice and for each specialty. For hospitals, the latitude/longitude locations are derived from the postal codes of two groups of hospitals that are contained in the CIHI database known as the "Canadian Management Information Systems Database." Both groups of hospitals are referred to as "general" hospitals, but differ with respect to whether they have long-term care units. For this study, distances between population locations and the nearest hospital were computed using 245 general hospitals without long-term care units and 403 general hospitals with long-term care units. No distinctions were made with respect to the size of those hospitals.

Appendix C

Medical Specialty Categories—
Southam Medical Database

Medical Specialty Categories— Southam Medical Database

This list indicates the specialty codes as listed in the SMDB. They are also comparable to the National Physician Database (NPDB) groupings. The specialties have been grouped into appropriate categories for use in reports and tables. The listed groupings have changed since originally constructed in the early 1970s. Some additional specialty codes have been added. All specialties and subspecialties present in the SMDB are listed, whether or not they are still recognized by the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec.

"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists. "Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

1.0 Family medicine
Family medicine
Emergency family medicine

2.0 Medical specialties

2.1 Clinical specialties
Internal medicine
    Cardiology
    Clinical immunology and allergy
    Endocrinology and metabolism
    Gastroenterology
    Internal medicine
    Geriatric medicine
    Hematology
    Infectious diseases
    Nephrology
    Medical oncology
    Respirology
    Rheumatology
Medical genetics
Dermatology
Neurology
    Electroencephalography
Pediatrics
    Pediatric cardiology
Physical medicine and rehabilitation

Psychiatry
  Neurology and/or psychiatry
Community medicine (used to be public health)
Emergency medicine
Occupational medicine
Anesthesia
Nuclear medicine
Diagnostic radiology
  Diagnostic and therapeutic radiology
Radiation oncology (used to be therapeutic radiology)

2.2 Laboratory specialties

Medical biochemistry
Medical microbiology
Pathology
  Anatomical pathology
  Hematological pathology
  Neuropathology
  General Pathology

3.0 Surgical specialties

General surgery
  Pediatric general surgery
  Vascular surgery
Cardiothoracic surgery
  Cardiac surgery
  Thoracic surgery
  Cardiovascular and thoracic surgery
Neurosurgery
Obstetrics and gynecology
  Obstetrics
  Gynecology
Ophthalmology
Otolaryngology
Orthopedic surgery
Plastic surgery
Urology

4.0 Medical scientists

Medical scientist—medicine
Medical scientist—surgery

Appendix D

Medical Specialty Categories— National Physician Database

Medical Specialty Categories—National Physician Database

1.0 Family medicine
Residency
General practice
Family practice
Community medicine and public health
Emergency medicine

2.0 Medical specialties
Internal medicine
    Cardiology
    Clinical immunology and allergy
    Endocrinology and metabolism
    Gastroenterology
    Internal medicine
    Geriatric medicine
    Hematology
    Tropical medicine
    Nephrology
    Medical oncology
    Respirology
    Rheumatology
    Medical genetics
Dermatology
Neurology
    Neurology and electroencephalography
    Electroencephalography
Pediatrics
Physical medicine and rehabilitation
    Electromyography
Psychiatry
    Psychiatry and neuropsychiatry
    Neuropsychiatry
Anesthesia

3.0 Surgical specialties

General surgery
Thoracic/cardiovascular surgery
    Cardiovascular surgery
    Thoracic surgery
Neurosurgery
Obstetrics and gynecology
    Obstetrics
    Gynecology
Ophthalmology
    Ophthalmology and otolaryngology
Otolaryngology
Orthopedic surgery
Plastic surgery
Urology

Note: Although genetics is no longer a subspecialty of internal medicine, it is included in the internal medicine category because the number of physician records assigned to this specialty is relatively small.

Appendix E

2004 National Physician Survey Questions

7.   **Please indicate ALL areas of professional activity that are part of your practice and/or are areas of special interest. For areas of special interest, also give the percent of time spent in each (percentages do not have to total 100% but must not exceed 100%).** *Please note: you do not have to be certified in the area of professional activity to include it in your profile.*

Area of Professional Activity		Part of My Practice	Area of Special Interest	If Area of Special Interest, Percent of Time
Addiction medicine	593	❏	❏	%
Administration	523	❏	❏	%
Alternative/complementary medicine	599	❏	❏	%
Adolescent medicine	625	❏	❏	%
Anaesthesia	101	❏	❏	%
Cancer care/oncology	132	❏	❏	%
Cardiology	103	❏	❏	%
Chronic disease management	699	❏	❏	%
Community medicine/public health	107	❏	❏	%
Dermatology/cosmetic medicine	112	❏	❏	%
Emergency medicine	115	❏	❏	%
Family practice/general practice/primary care	587	❏	❏	%
Geriatric medicine/care of the elderly	121	❏	❏	%
Gynecology	308	❏	❏	%
Home care	543	❏	❏	%
Hospitalist care	545	❏	❏	%
Infectious diseases	125	❏	❏	%
International medicine	589	❏	❏	%
Legal/medico-legal consultations	555	❏	❏	%
Nutrition	541	❏	❏	%
Obstetrics	307	❏	❏	%
Occupational/industrial medicine	139	❏	❏	%
Pain management	521	❏	❏	%
Palliative care	427	❏	❏	%
Pediatrics	141	❏	❏	%
Preventive medicine	697	❏	❏	%
Psychiatry	167	❏	❏	%
Psychotherapy/counseling	598	❏	❏	%
Research	510	❏	❏	%
Sports medicine	615	❏	❏	%
Surgery	304	❏	❏	%
Surgical assisting	306	❏	❏	%

Area of Professional Activity		Part of My Practice	Area of Special Interest	If Area of Special Interest, Percent of Time
Teaching	695	❑	❑	%
Travel/tropical medicine	591	❑	❑	%
Women's health care	565	❑	❑	%
Other _____	821	❑	❑	%
Other _____	822	❑	❑	%
Other _____	823	❑	❑	%
Other _____	824	❑	❑	%
Other _____	825	❑	❑	%

8. **Which of the following procedures do you perform as part of your practice?**
Please check ALL that apply.

❑ Audiometry

❑ Refraction

❑ ECG interpretation

❑ Pulmonary function testing

❑ Pap smears

❑ IUD insertion

❑ Endometrial aspiration

❑ Lumbar puncture

❑ Casting/splinting

❑ Aspiration/injection of joints

❑ Incising and draining abscesses

❑ Anoscopy

❑ Other endoscopy

_____

❑ Needle aspiration (for diagnosis/biopsy)

❑ Removal of superficial skin lesions (e.g. nevi, keratoses, cysts)

❑ Cryotherapy of superficial skin lesions (e.g. warts, nevi, lentigo)

❑ Skin biopsy

❑ Other biopsy

_____

❑ Suturing

❑ Toenail surgery

❑ Other minor surgery

_____

❑ Other procedures

_____

9. **Please describe your involvement in maternity and newborn care.**

   ❏ Maternity and newborn care **are not** part of my practice *(Please SKIP TO QUESTION 10)*

   ❏ Maternity and newborn care **are** part of my practice, and I provide: *Please check ALL that apply.*

      ❏ Prenatal/Antenatal care

      ❏ Intrapartum care. Please indicate the number of births you attend per year: _____

      ❏ I do **not** provide intrapartum care, but usually refer low-risk women to:

         ❏ Another FP/GP   ❏ An Obstetrician/Gynecologist   ❏ A midwife

      ❏ Postpartum care (in hospital or office, with reference to the mother)

      ❏ Newborn care (in hospital or office, with reference to the baby)

18. **With reference to the LAST TWO YEARS, please check all of the following changes you have already made. With reference to the NEXT TWO YEARS, please check all of the following changes that you are planning to make.**

		Changes made in the LAST 2 years	Changes planned in the NEXT 2 years
Relocate my practice within the same province/territory	A	❏	❏
Relocate my practice to another province/territory in Canada	B	❏	❏
Relocate to Canada from another country	C	❏	❏
Leave Canada to practise in another country	D	❏	❏
Move from an urban/suburban to a rural/remote practice setting	E	❏	❏
Move from a rural/remote to an urban/suburban practice setting	F	❏	❏
Specialize in an area of medical practice _____	G	❏	❏
Reduce scope of practice _____	H	❏	❏
Expand scope of practice _____	I	❏	❏
Reduce teaching, research, and/or administration responsibilities	J	❏	❏
Increase teaching, research, and/or administration responsibilities	K	❏	❏
Take a temporary leave of absence	L	❏	❏
Reduce weekly work hours (excluding on call)	M	❏	❏
Increase weekly work hours (excluding on call)	N	❏	❏
Reduce on-call hours	O	❏	❏

		Changes made in the LAST 2 years	Changes planned in the NEXT 2 years
Increase on-call hours	**P**	❑	❑
Change from solo to group practice	**Q**	❑	❑
Change to a multidisciplinary practice model	**R**	❑	❑
Become part of a practice network	**S**	❑	❑
Change in mode of remuneration	**T**	❑	❑
Retrain within the medical field	**U**	❑	❑
Retire	**V**	❑	❑
Leave active practice for reason(s) other than above	**W**	❑	❑
Other change(s)	**X**	❑	❑
NO CHANGES (*if no changes made or planned, SKIP TO QUESTION 20*)	**Y**	❑	❑

Appendix F

Maps of Distribution of Physicians by Specialty

Figure F.1.   Distribution of Family Medicine Physicians in Canada, 2004
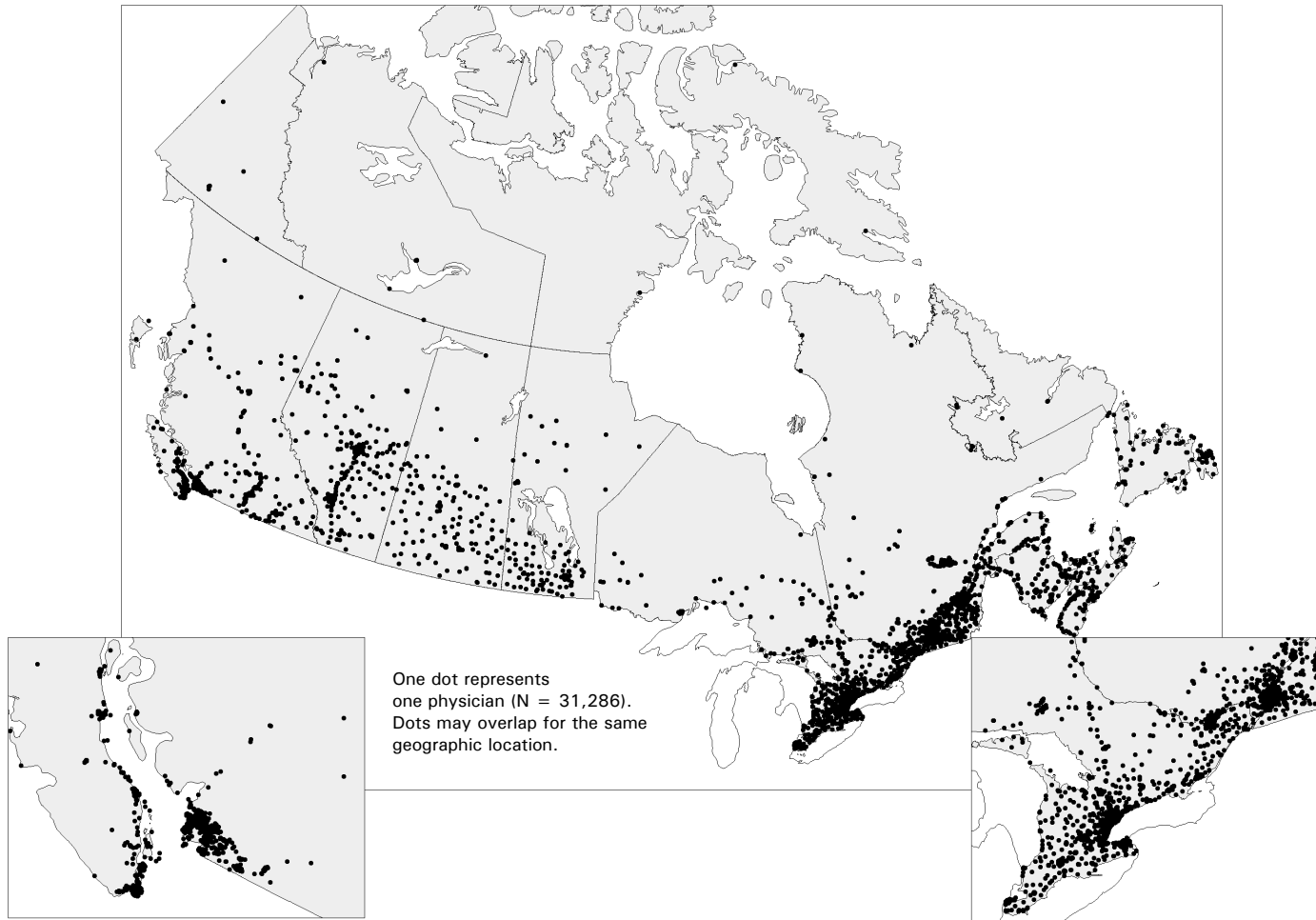
One dot represents
one physician (N = 31,286).
Dots may overlap for the same
geographic location.

Note:
"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.2.   Distribution of Specialists in Canada, 2004
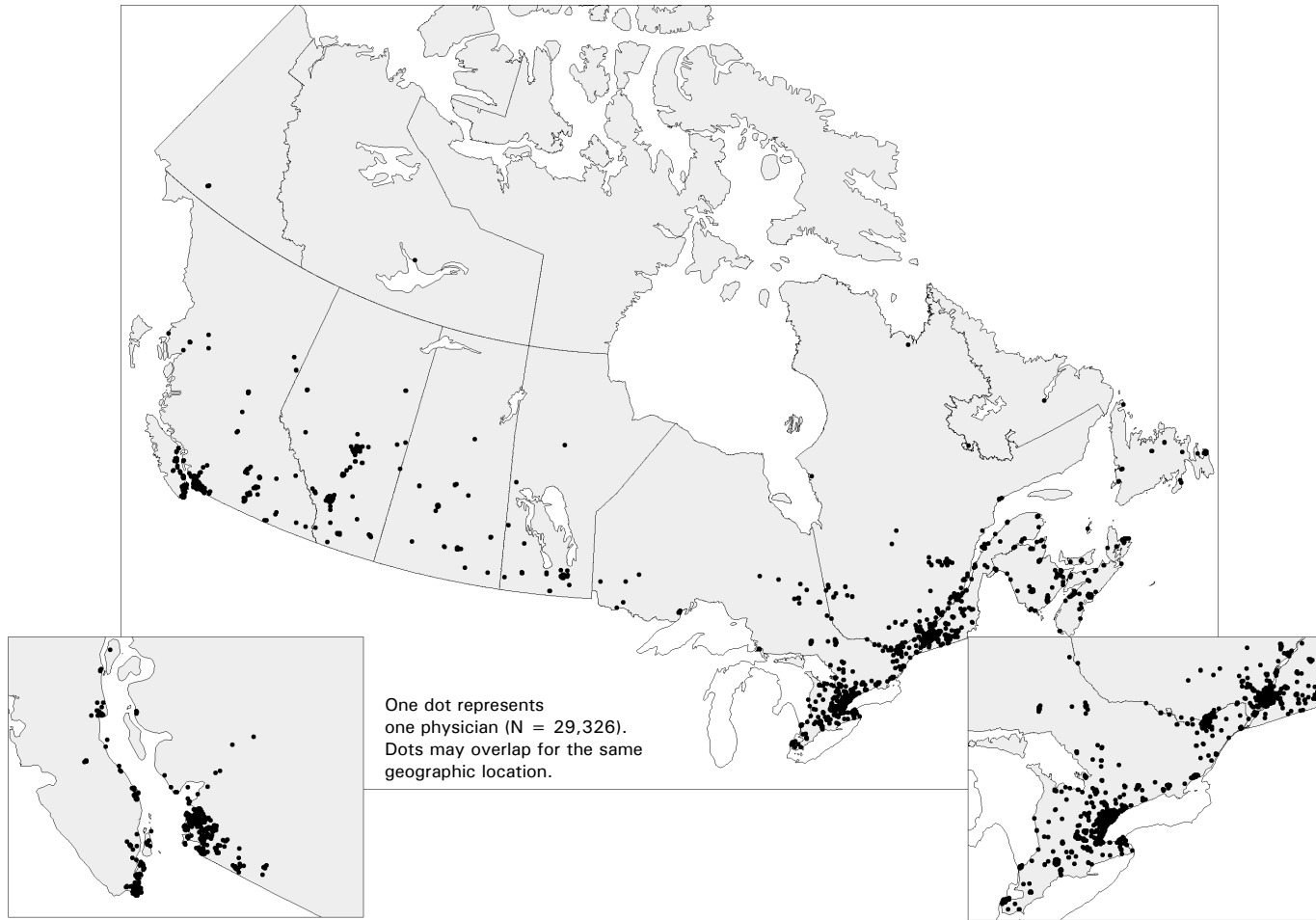
One dot represents one physician (N = 29,326). Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.3.   Distribution of Internal Medicine Physicians in Canada, 2004
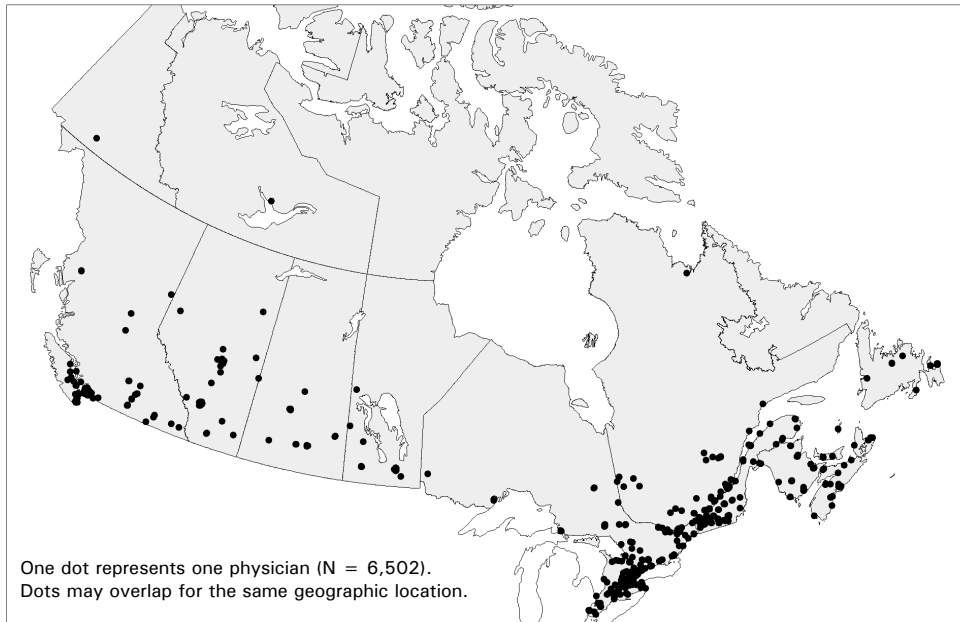
One dot represents one physician (N = 6,502).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.4.   Distribution of Dermatologists in Canada, 2004
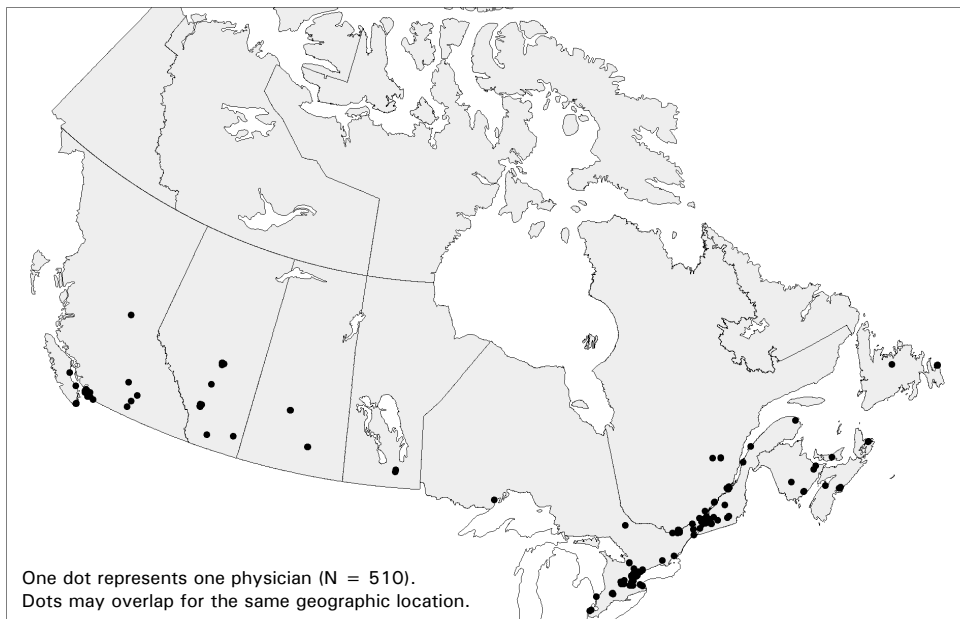
One dot represents one physician (N = 510).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.5.   Distribution of Neurologists in Canada, 2004
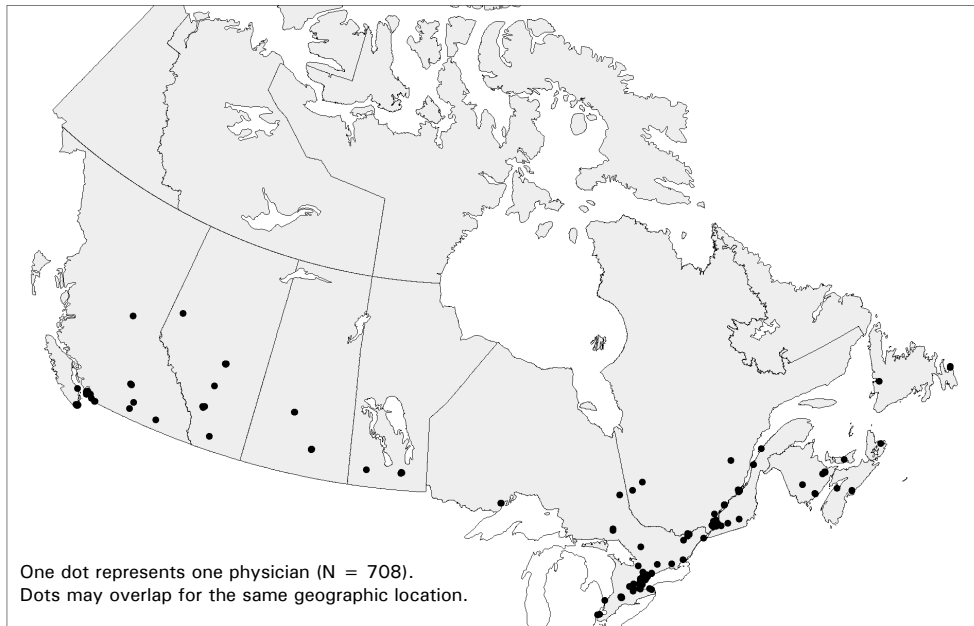
One dot represents one physician (N = 708).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.6.   Distribution of Pediatricians in Canada, 2004
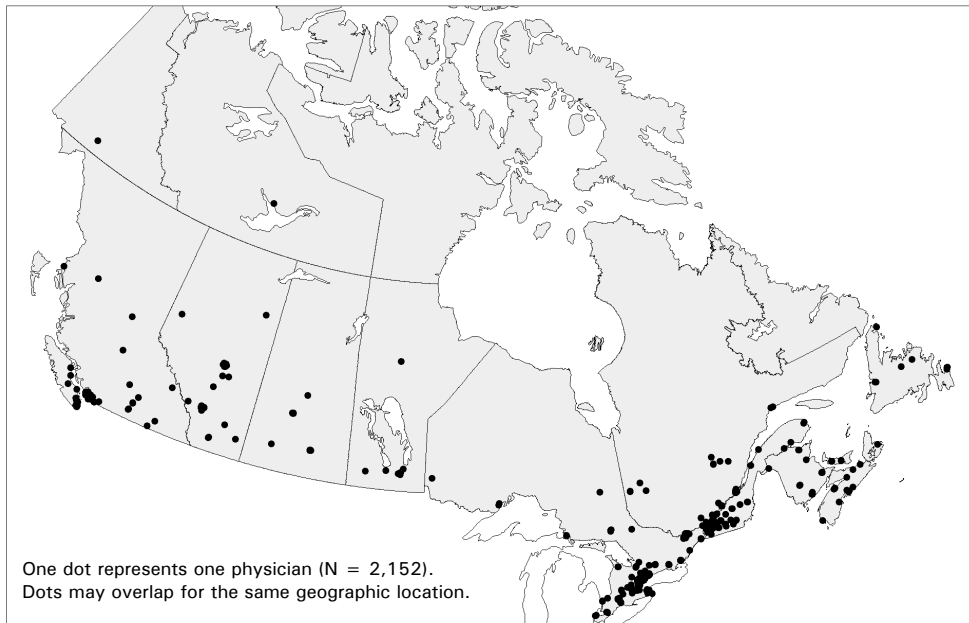
One dot represents one physician (N = 2,152).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.7.   Distribution of Physical Medicine and Rehabilitation Physicians in Canada, 2004
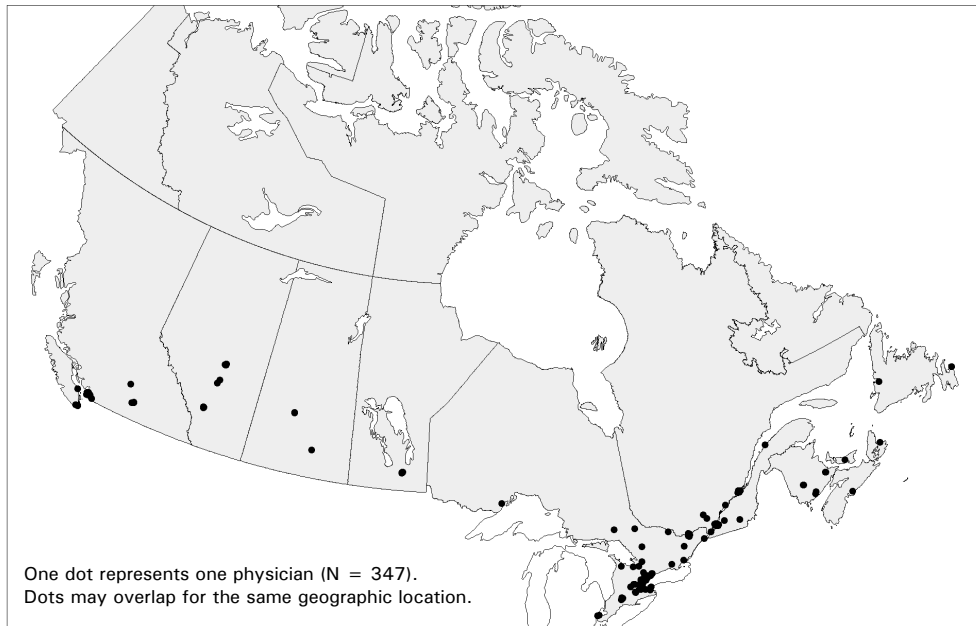
One dot represents one physician (N = 347).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.8.   Distribution of Psychiatrists in Canada, 2004
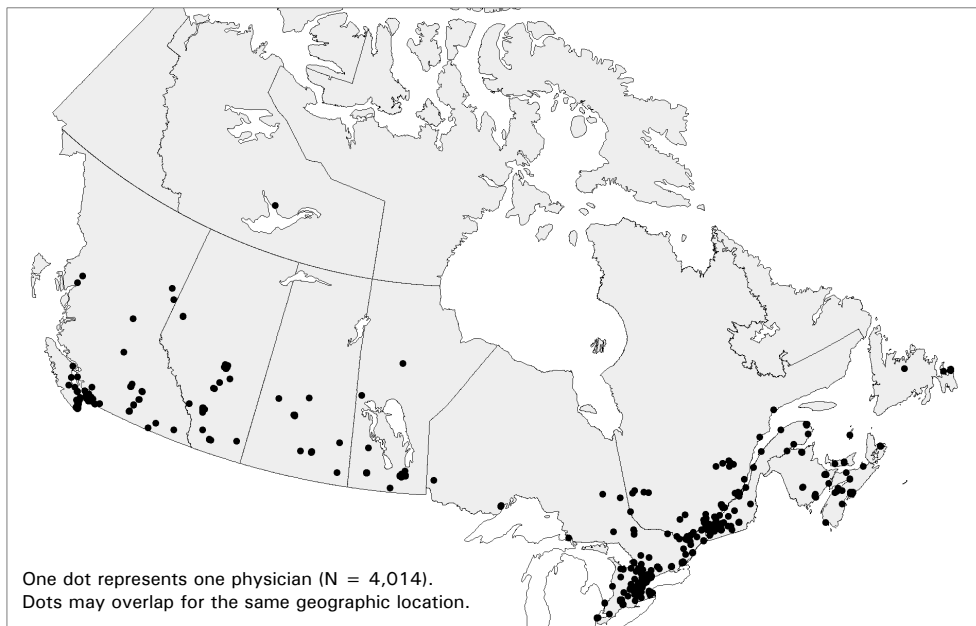
One dot represents one physician (N = 4,014).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.9.   Distribution of Community Medicine Physicians in Canada, 2004
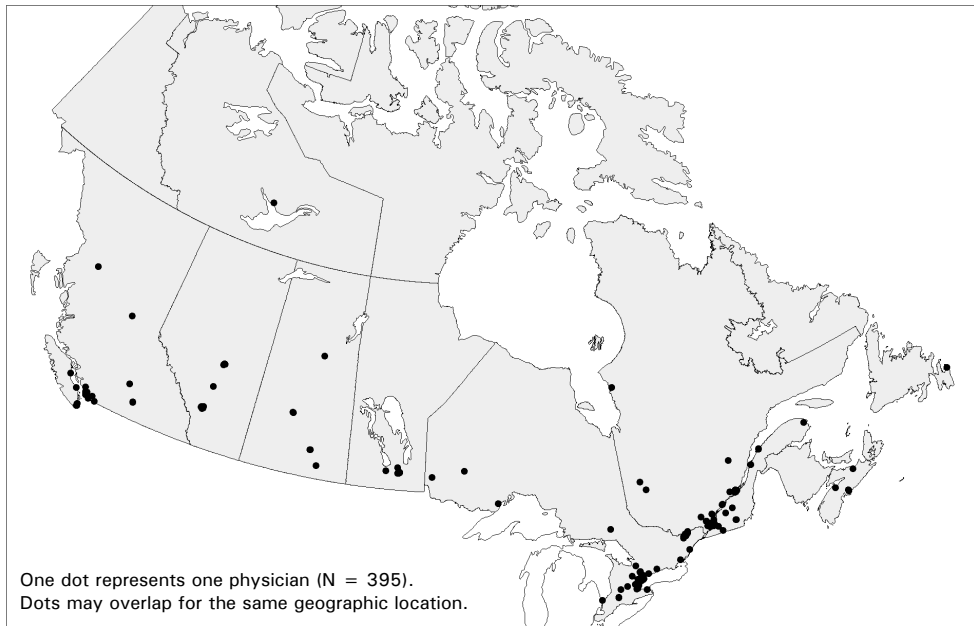
One dot represents one physician (N = 395).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec
(see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.10.   Distribution of Emergency Medicine Physicians in Canada, 2004
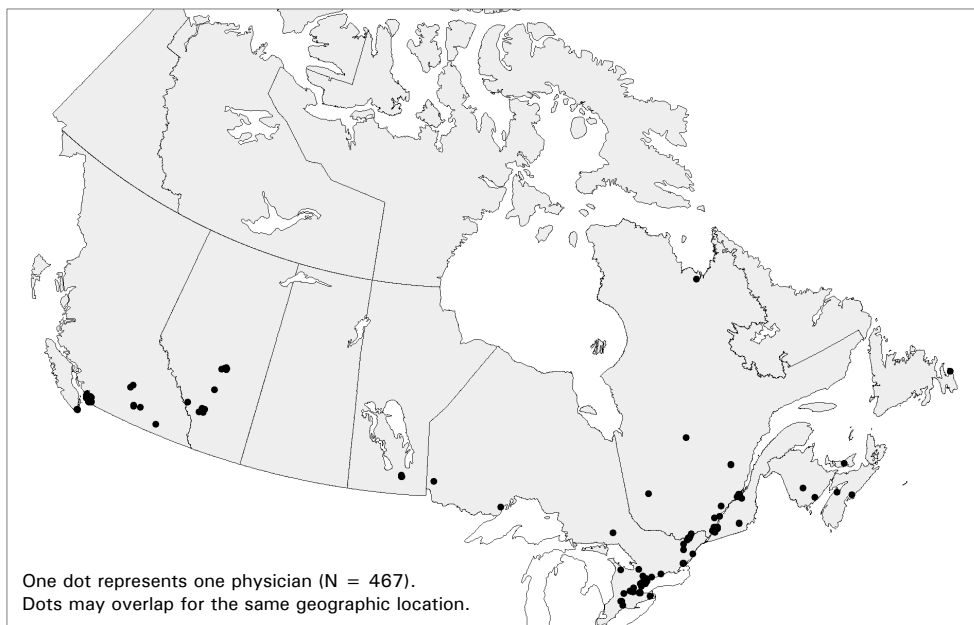
One dot represents one physician (N = 467).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec
(see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.11.   Distribution of General Surgeons in Canada, 2004
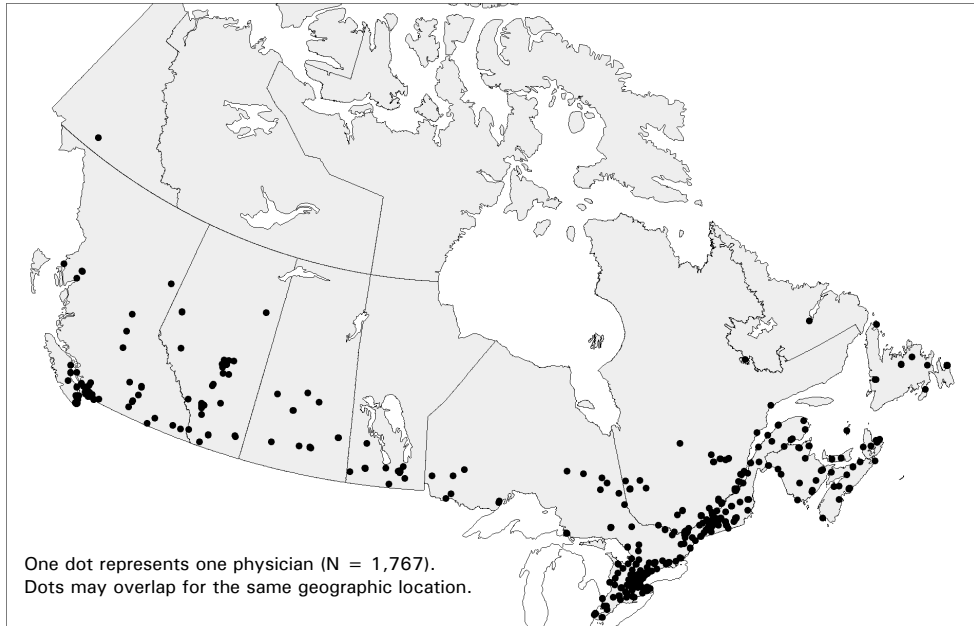
One dot represents one physician (N = 1,767).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.12.   Distribution of Cardio and Thoracic Surgeons in Canada, 2004
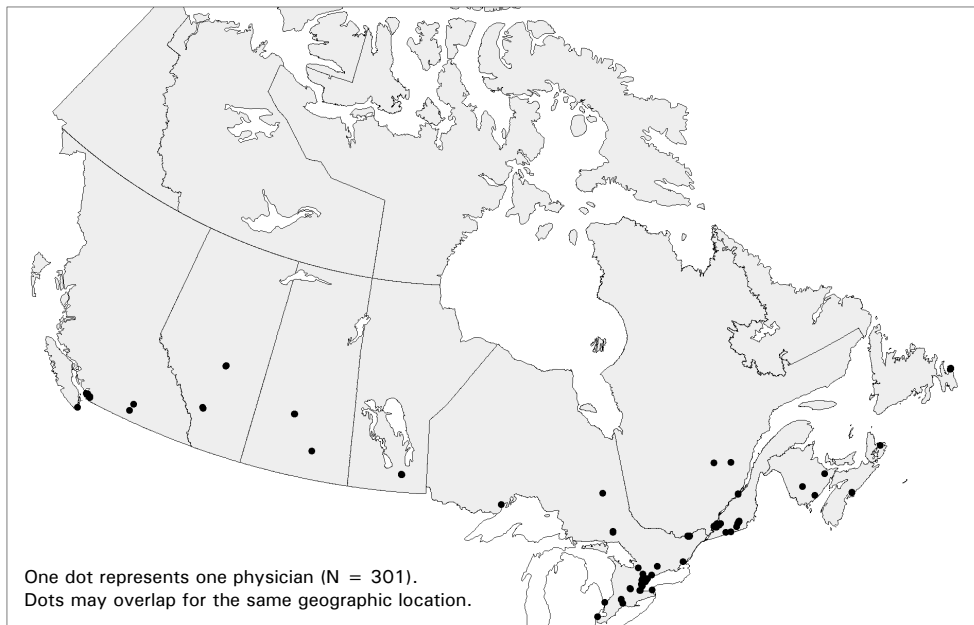
One dot represents one physician (N = 301).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.13.   Distribution of Neurosurgeons in Canada, 2004
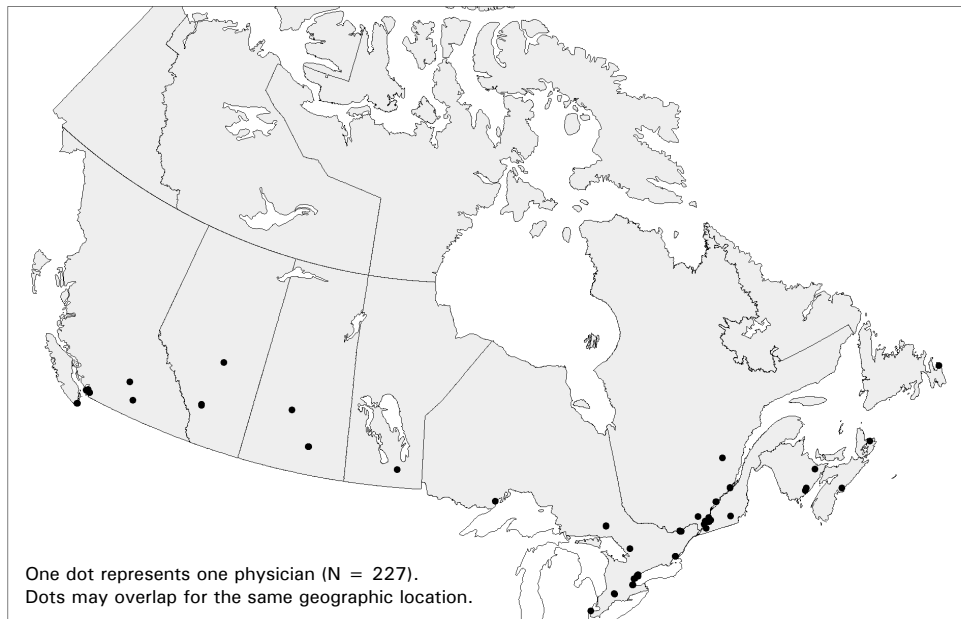
One dot represents one physician (N = 227).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.14.   Distribution of Obstetricians and Gynecologists in Canada, 2004
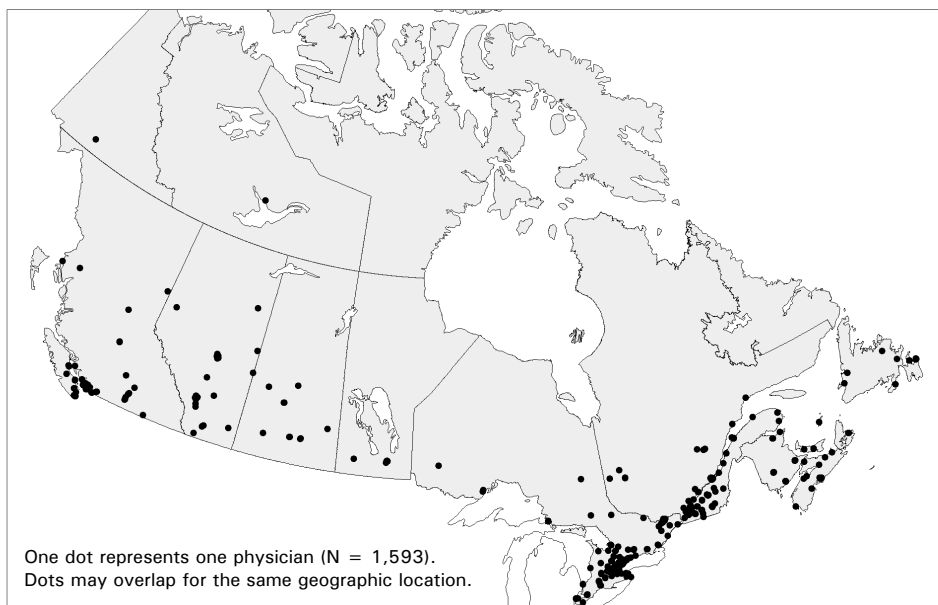
One dot represents one physician (N = 1,593).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.15.   Distribution of Ophthalmologists in Canada, 2004
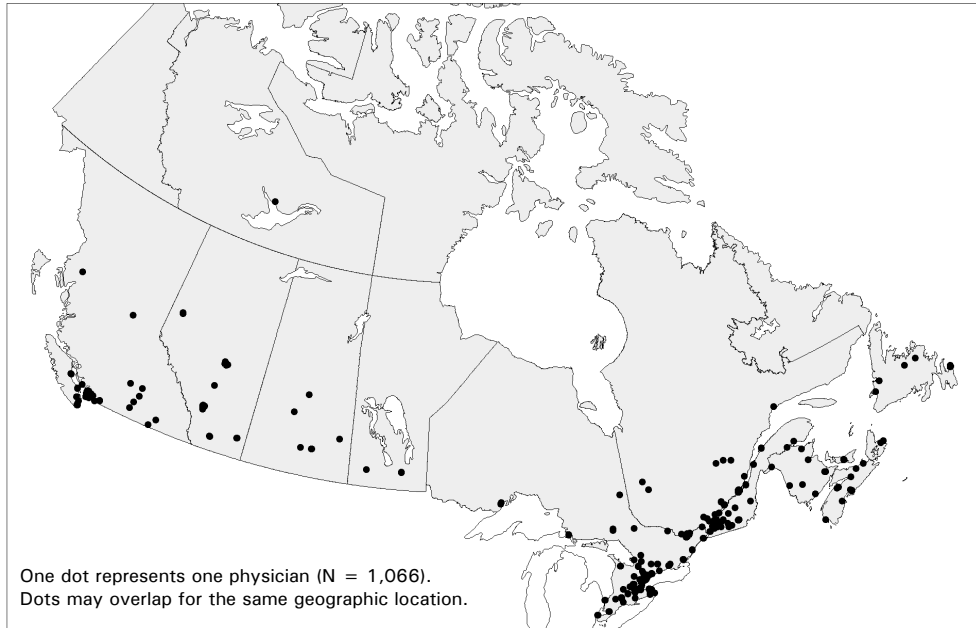
One dot represents one physician (N = 1,066).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.16.   Distribution of Otolaryngologists in Canada, 2004
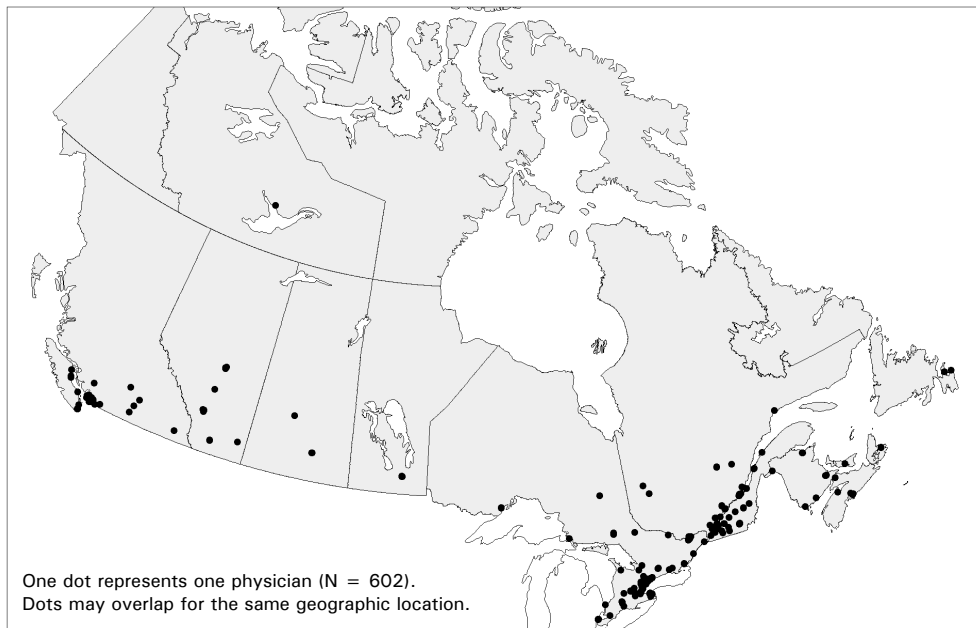
One dot represents one physician (N = 602).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.17. Distribution of Orthopedic Surgeons in Canada, 2004
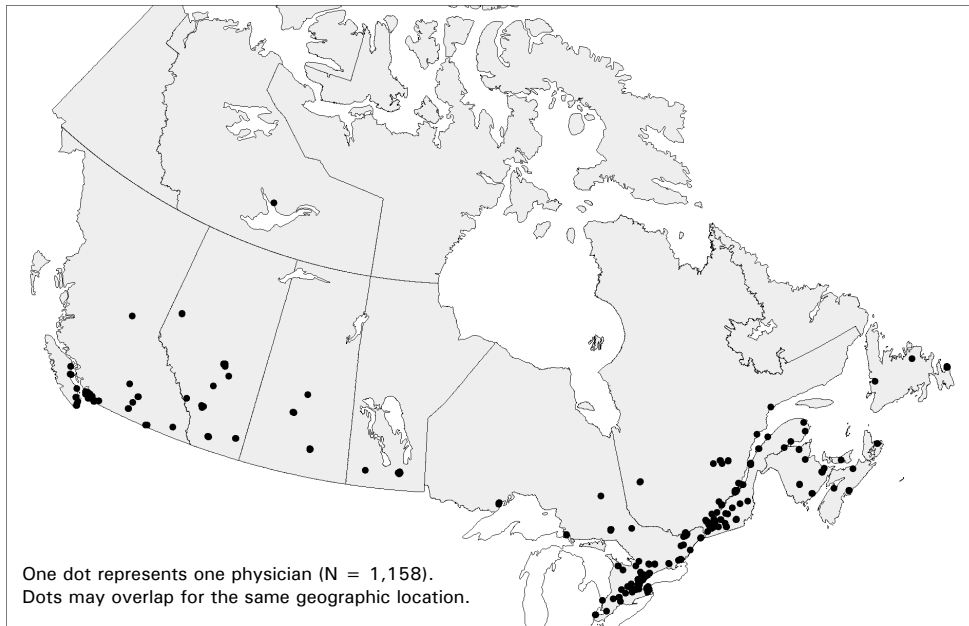
One dot represents one physician (N = 1,158).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.18. Distribution of Plastic Surgeons in Canada, 2004
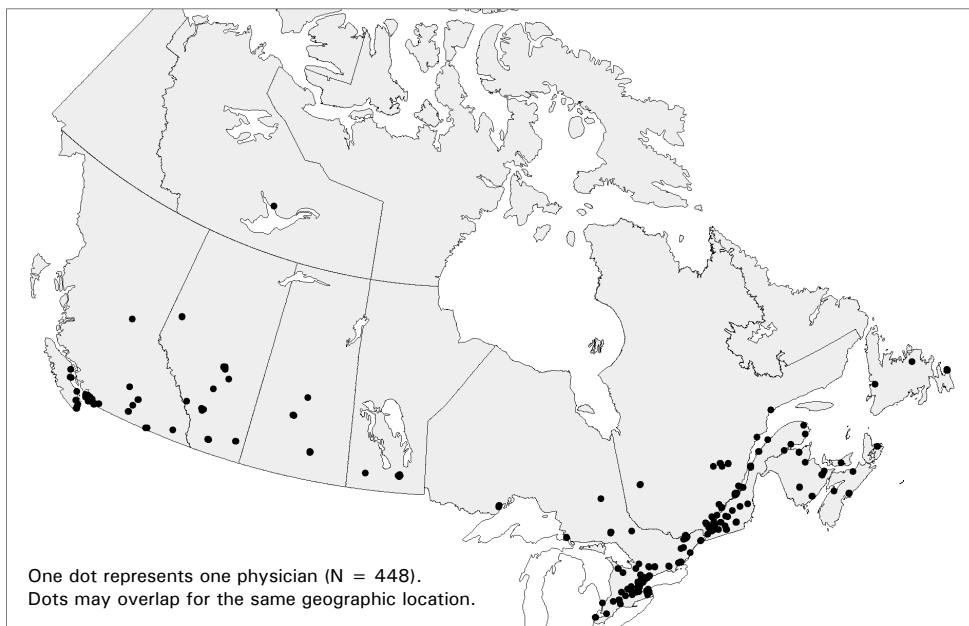
One dot represents one physician (N = 448).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.19. Distribution of Urologists in Canada, 2004
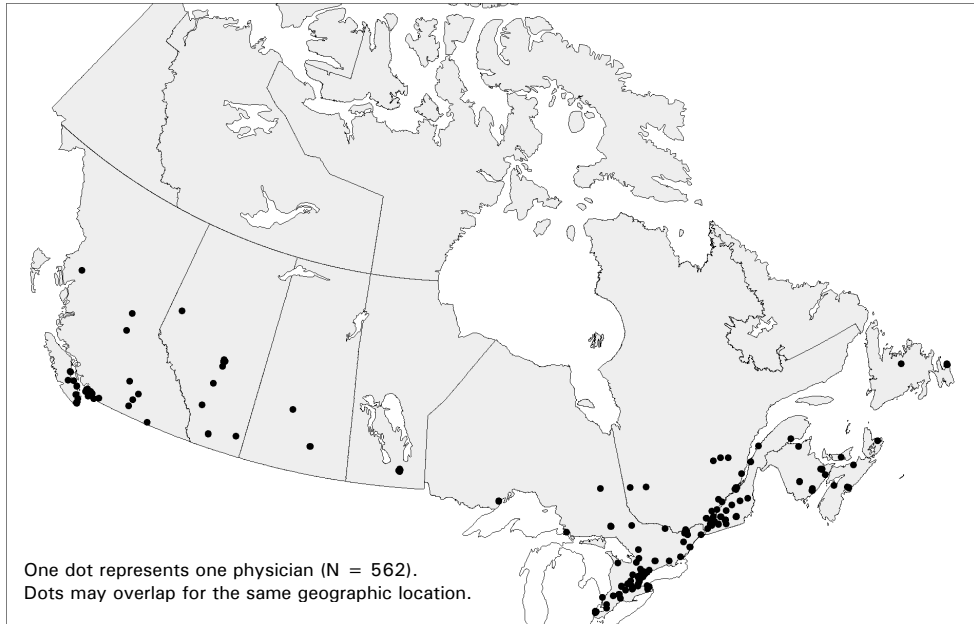
One dot represents one physician (N = 562).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.20. Distribution of Anesthesiologists in Canada, 2004
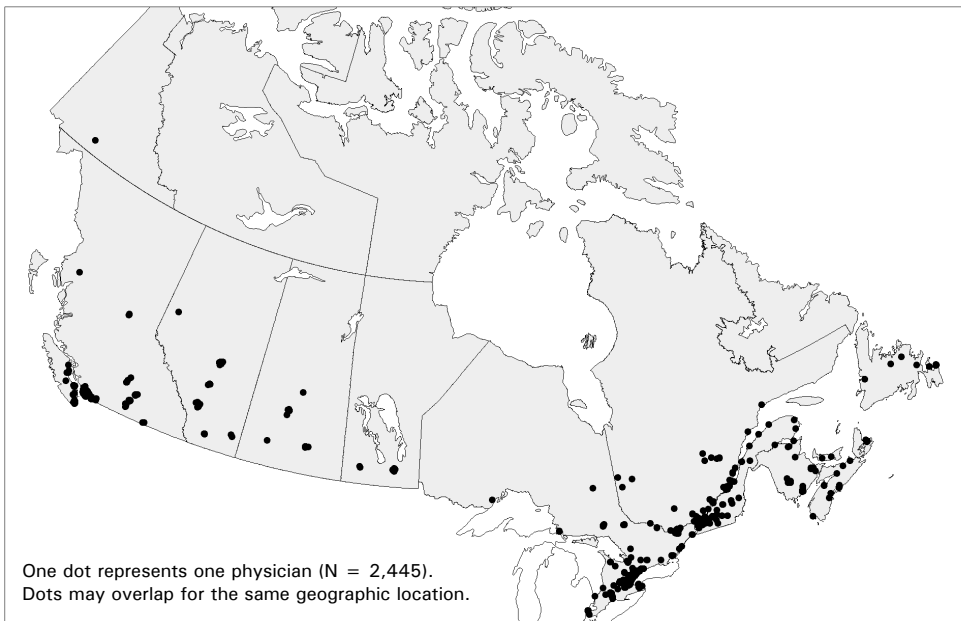
One dot represents one physician (N = 2,445).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.21.   Distribution of Nuclear Medicine Physicians in Canada, 2004
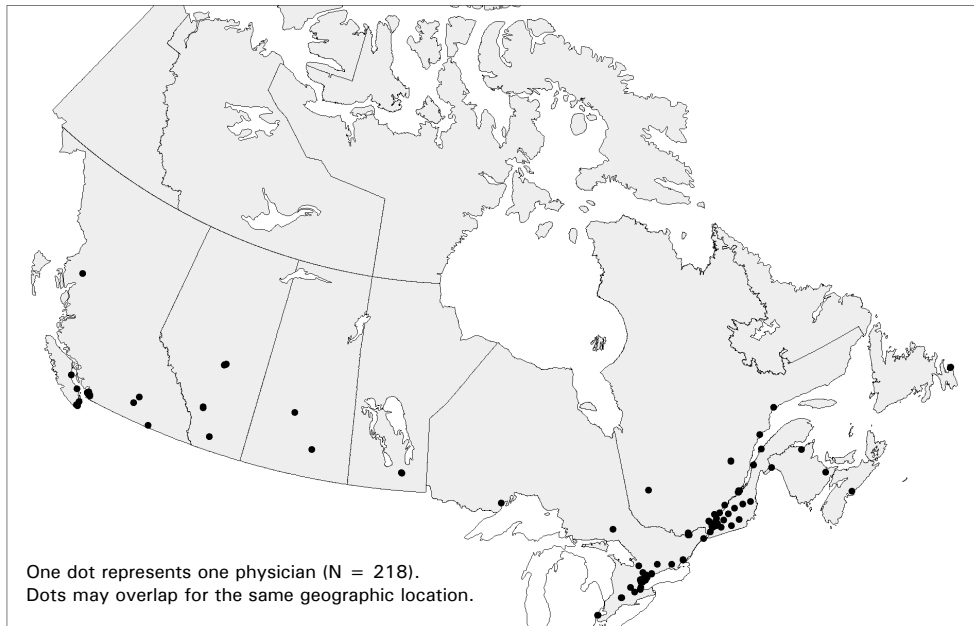
One dot represents one physician (N = 218).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.22.   Distribution of Medical Microbiologists in Canada, 2004
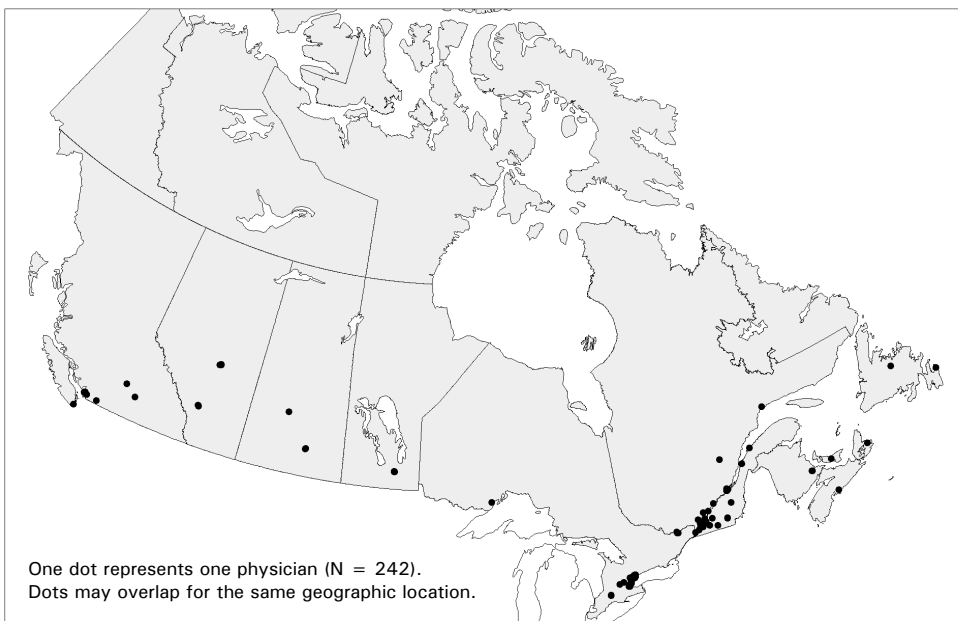
One dot represents one physician (N = 242).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.23.   Distribution of Pathologists in Canada, 2004
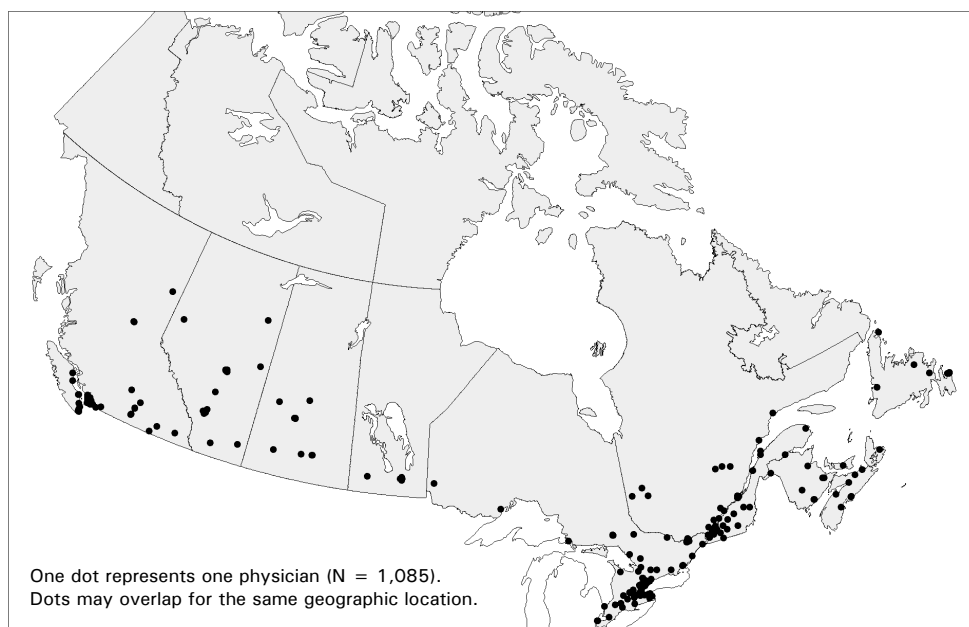
One dot represents one physician (N = 1,085).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.24.   Distribution of Diagnostic Radiologists in Canada, 2004
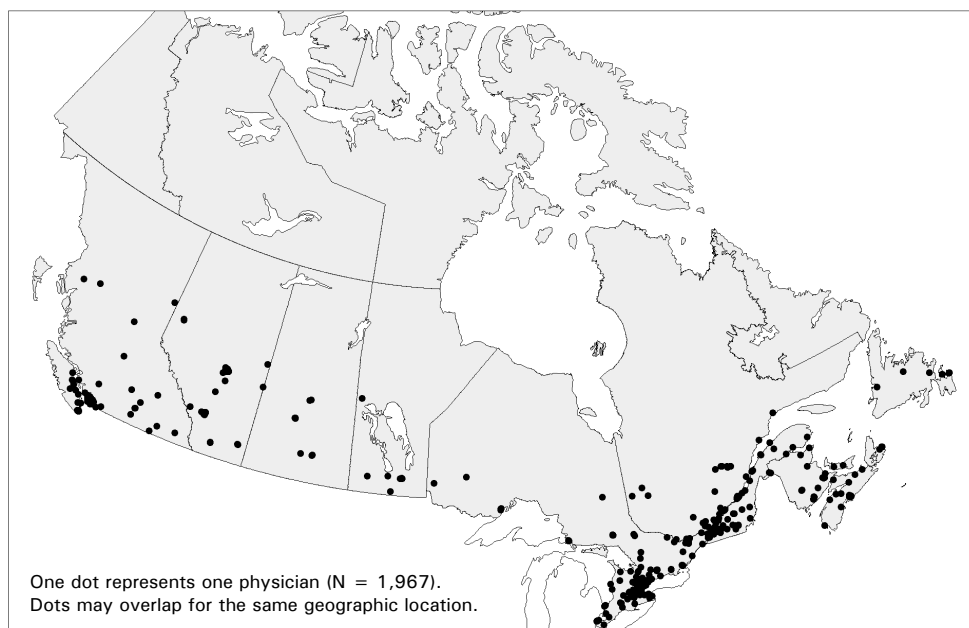
One dot represents one physician (N = 1,967).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.25.   Distribution of Radiation Oncologists in Canada, 2004
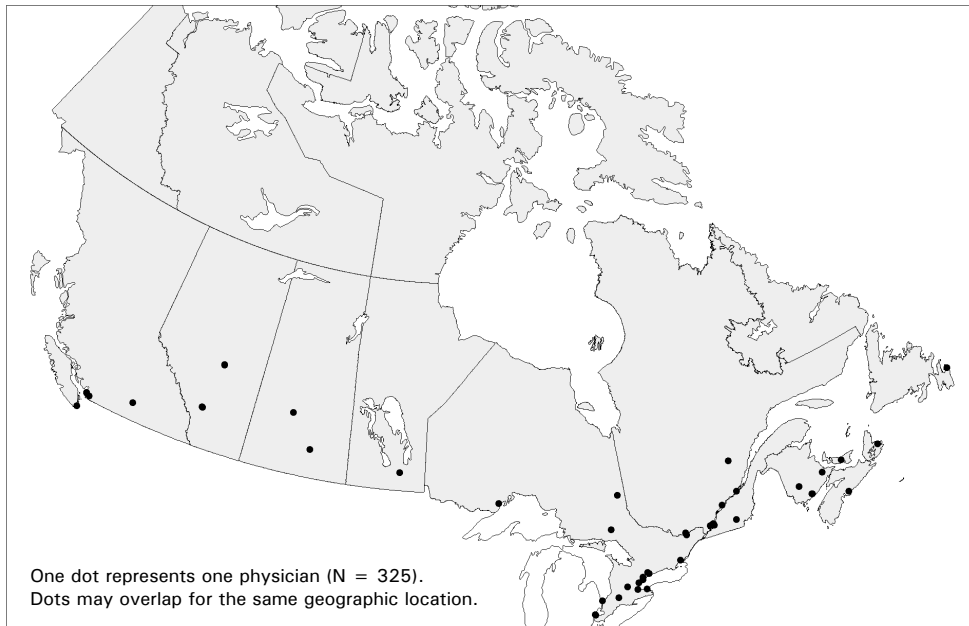
One dot represents one physician (N = 325).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.26.   Distribution of Occupational Medicine Physicians in Canada, 2004
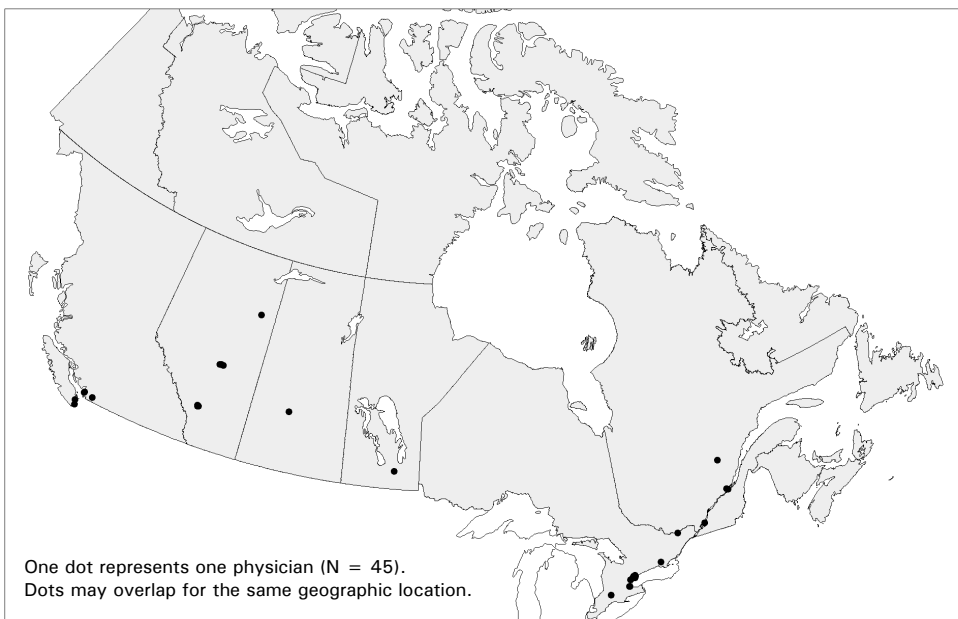
One dot represents one physician (N = 45).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.27. Distribution of Medical Biochemists in Canada, 2004
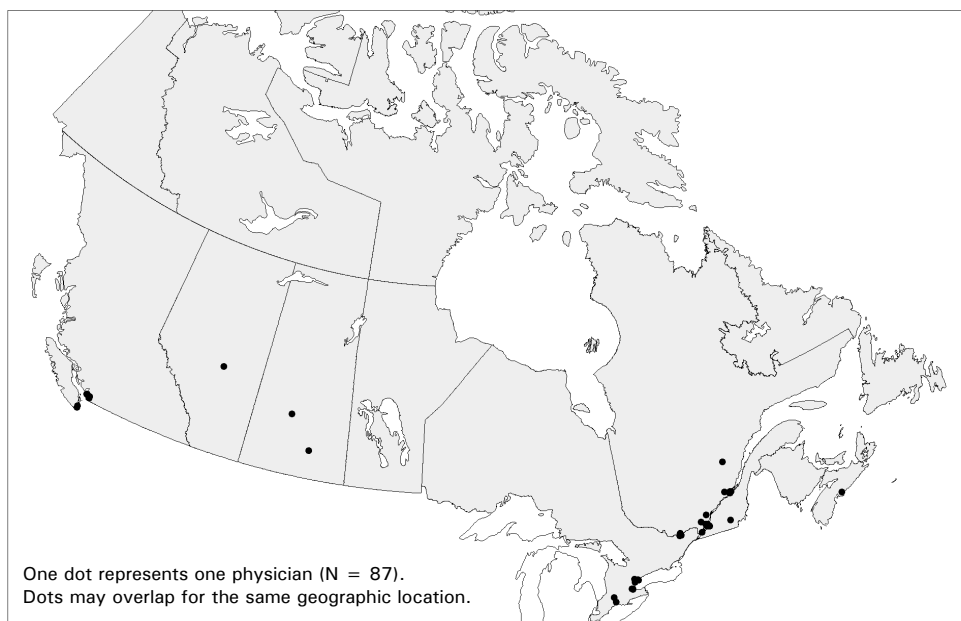
One dot represents one physician (N = 87).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.28. Distribution of Medical Scientists in Canada, 2004
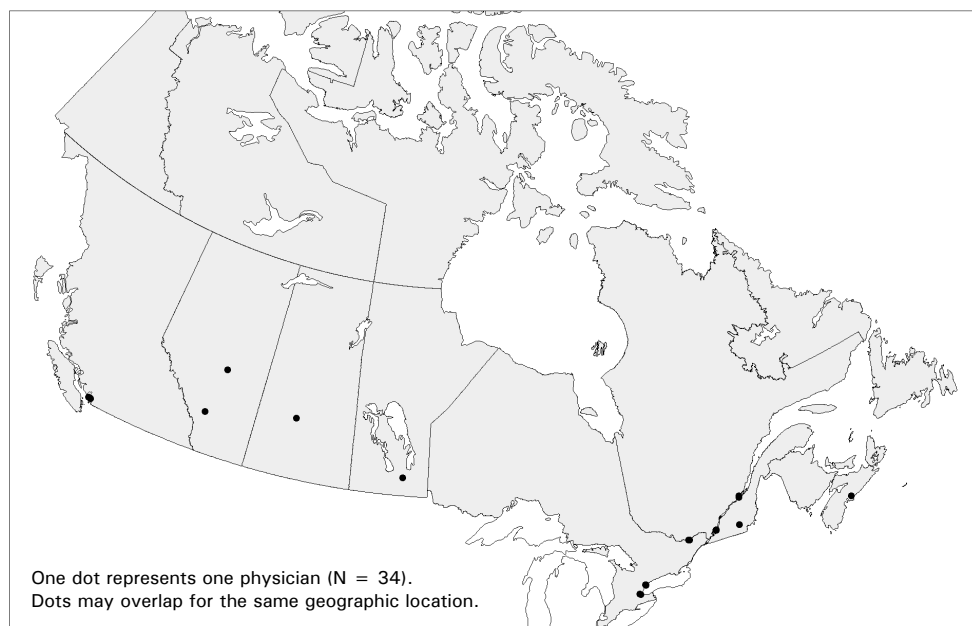
One dot represents one physician (N = 34).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Figure F.29.   Distribution of Medical Geneticists in Canada, 2004
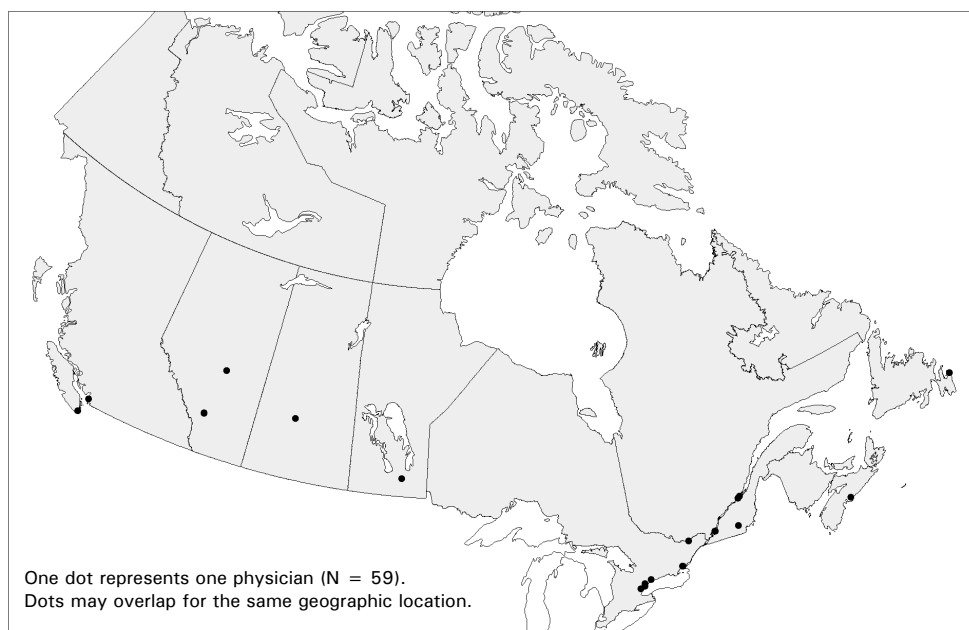
One dot represents one physician (N = 59).
Dots may overlap for the same geographic location.

Note:
"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Appendix G

Data Tables

Table G.1.   Number of Male Family Physicians by Urban−Rural Category, Province/Territory and Age Group, Canada, 2004

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Urban														
1,000,000+	n/a	n/a	n/a	n/a	2,153	2,978	n/a	n/a	n/a	1,393	n/a	n/a	n/a	6,524
<35	n/a	n/a	n/a	n/a	150	230	n/a	n/a	n/a	100	n/a	n/a	n/a	480
35−39	n/a	n/a	n/a	n/a	169	363	n/a	n/a	n/a	141	n/a	n/a	n/a	673
40−44	n/a	n/a	n/a	n/a	233	417	n/a	n/a	n/a	222	n/a	n/a	n/a	872
45−49	n/a	n/a	n/a	n/a	364	393	n/a	n/a	n/a	192	n/a	n/a	n/a	949
50−54	n/a	n/a	n/a	n/a	400	440	n/a	n/a	n/a	210	n/a	n/a	n/a	1,050
55−59	n/a	n/a	n/a	n/a	365	444	n/a	n/a	n/a	242	n/a	n/a	n/a	1,051
60−64	n/a	n/a	n/a	n/a	218	299	n/a	n/a	n/a	150	n/a	n/a	n/a	667
65+	n/a	n/a	n/a	n/a	254	392	n/a	n/a	n/a	136	n/a	n/a	n/a	782
500,000−999,999	n/a	n/a	n/a	n/a	562	865	426	n/a	1,326	n/a	n/a	n/a	n/a	3,179
<35	n/a	n/a	n/a	n/a	31	72	37	n/a	208	n/a	n/a	n/a	n/a	348
35−39	n/a	n/a	n/a	n/a	25	112	54	n/a	148	n/a	n/a	n/a	n/a	339
40−44	n/a	n/a	n/a	n/a	88	116	72	n/a	187	n/a	n/a	n/a	n/a	463
45−49	n/a	n/a	n/a	n/a	103	126	74	n/a	220	n/a	n/a	n/a	n/a	523
50−54	n/a	n/a	n/a	n/a	117	133	59	n/a	194	n/a	n/a	n/a	n/a	503
55−59	n/a	n/a	n/a	n/a	112	126	46	n/a	153	n/a	n/a	n/a	n/a	437
60−64	n/a	n/a	n/a	n/a	48	102	33	n/a	105	n/a	n/a	n/a	n/a	288
65+	n/a	n/a	n/a	n/a	38	78	51	n/a	111	n/a	n/a	n/a	n/a	278
100,000−499,999	136	n/a	395	184	457	1,583	n/a	353	n/a	539	n/a	n/a	n/a	3,647
<35	14	n/a	34	19	35	121	n/a	25	n/a	18	n/a	n/a	n/a	266
35−39	15	n/a	61	21	38	174	n/a	50	n/a	49	n/a	n/a	n/a	408
40−44	17	n/a	63	31	63	258	n/a	52	n/a	78	n/a	n/a	n/a	562
45−49	21	n/a	60	36	84	235	n/a	49	n/a	109	n/a	n/a	n/a	594
50−54	24	n/a	42	25	97	228	n/a	44	n/a	105	n/a	n/a	n/a	565
55−59	19	n/a	59	26	65	244	n/a	48	n/a	85	n/a	n/a	n/a	546
60−64	14	n/a	37	16	46	148	n/a	36	n/a	55	n/a	n/a	n/a	352
65+	12	n/a	39	10	29	175	n/a	49	n/a	40	n/a	n/a	n/a	354
50,000−99,999	n/a	48	n/a	49	183	354	n/a	n/a	181	324	n/a	n/a	n/a	1,139
<35	n/a	5	n/a	5	14	14	n/a	n/a	12	27	n/a	n/a	n/a	77
35−39	n/a	5	n/a	7	14	36	n/a	n/a	25	43	n/a	n/a	n/a	130
40−44	n/a	6	n/a	6	29	49	n/a	n/a	27	55	n/a	n/a	n/a	172
45−49	n/a	13	n/a	8	35	56	n/a	n/a	37	47	n/a	n/a	n/a	196
50−54	n/a	4	n/a	10	37	49	n/a	n/a	29	52	n/a	n/a	n/a	181
55−59	n/a	6	n/a	5	25	74	n/a	n/a	27	49	n/a	n/a	n/a	186
60−64	n/a	5	n/a	4	18	39	n/a	n/a	13	31	n/a	n/a	n/a	110
65+	n/a	4	n/a	4	11	37	n/a	n/a	11	20	n/a	n/a	n/a	87
25,000−49,999	44	n/a	70	n/a	360	214	39	77	83	184	n/a	n/a	n/a	1,071
<35	4	n/a	4	n/a	36	15	5	7	5	13	n/a	n/a	n/a	89
35−39	4	n/a	4	n/a	42	31	2	13	17	20	n/a	n/a	n/a	133
40−44	9	n/a	16	n/a	65	24	6	11	10	27	n/a	n/a	n/a	168
45−49	10	n/a	12	n/a	62	35	16	11	23	39	n/a	n/a	n/a	208
50−54	6	n/a	9	n/a	62	36	2	13	9	36	n/a	n/a	n/a	173
55−59	5	n/a	11	n/a	64	36	5	8	7	35	n/a	n/a	n/a	171
60−64	4	n/a	9	n/a	17	20	2	9	5	6	n/a	n/a	n/a	72
65+	2	n/a	5	n/a	12	17	1	5	7	8	n/a	n/a	n/a	57
10,000−24,999	49	21	n/a	78	125	145	31	70	50	184	22	10	n/a	785
<35	1	1	n/a	8	12	9	4	11	3	19	0	3	n/a	71
35−39	5	3	n/a	11	8	20	3	5	4	23	4	1	n/a	87
40−44	9	0	n/a	15	19	24	3	15	10	25	2	2	n/a	124
45−49	10	5	n/a	15	29	19	10	6	8	33	5	0	n/a	140
50−54	8	4	n/a	7	28	25	5	7	12	31	5	1	n/a	133
55−59	10	4	n/a	7	14	24	2	8	6	28	3	1	n/a	107
60−64	2	1	n/a	6	8	14	2	7	2	14	1	1	n/a	58
65+	4	3	n/a	9	7	10	2	11	5	11	2	1	n/a	65

See notes at end of table.   (table continued on next page)

Table G.1.   Number of Male Family Physicians by Urban−Rural Category, Province/Territory and Age Group, Canada, 2004 (cont'd)

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Rural														
Strong MIZ	2	8	13	8	130	232	20	6	48	26	n/a	n/a	n/a	493
<35	0	0	1	1	6	13	2	0	5	0	n/a	n/a	n/a	28
35−39	0	1	0	1	7	12	2	0	7	2	n/a	n/a	n/a	32
40−44	0	0	3	0	14	35	3	1	6	6	n/a	n/a	n/a	68
45−49	1	3	3	0	23	33	5	1	11	3	n/a	n/a	n/a	83
50−54	0	1	4	2	39	45	4	1	5	5	n/a	n/a	n/a	106
55−59	1	1	1	1	20	46	1	2	7	5	n/a	n/a	n/a	85
60−64	0	1	1	2	11	25	1	0	5	3	n/a	n/a	n/a	49
65+	0	1	0	1	10	23	2	1	2	2	n/a	n/a	n/a	42
Moderate MIZ	51	11	55	58	414	252	74	30	105	115	n/a	n/a	n/a	1,165
<35	7	2	1	7	24	19	9	2	8	8	n/a	n/a	n/a	87
35−39	3	3	7	6	34	22	8	3	15	7	n/a	n/a	n/a	108
40−44	6	1	6	7	47	33	7	6	12	16	n/a	n/a	n/a	141
45−49	9	1	12	10	71	46	23	3	18	19	n/a	n/a	n/a	212
50−54	5	2	10	7	105	34	12	6	16	16	n/a	n/a	n/a	213
55−59	11	0	12	8	67	49	7	2	13	24	n/a	n/a	n/a	193
60−64	7	0	3	6	27	25	2	4	10	14	n/a	n/a	n/a	98
65+	3	2	4	7	39	24	6	4	13	11	n/a	n/a	n/a	113
Weak MIZ	122	8	133	95	228	233	124	127	282	218	n/a	n/a	n/a	1,570
<35	17	1	9	5	18	28	12	15	37	23	n/a	n/a	n/a	165
35−39	20	2	13	7	30	20	10	24	38	34	n/a	n/a	n/a	198
40−44	22	0	20	13	39	39	18	22	31	33	n/a	n/a	n/a	237
45−49	23	2	27	16	36	42	39	11	58	35	n/a	n/a	n/a	289
50−54	14	1	20	11	40	34	14	9	41	40	n/a	n/a	n/a	224
55−59	11	0	25	19	29	31	11	20	45	27	n/a	n/a	n/a	218
60−64	10	0	12	16	21	24	11	11	14	16	n/a	n/a	n/a	135
65+	5	2	7	8	15	15	9	15	18	10	n/a	n/a	n/a	104
No MIZ	4	n/a	1	5	36	3	16	22	4	20	n/a	n/a	n/a	111
<35	0	n/a	0	0	8	0	4	1	0	1	n/a	n/a	n/a	14
35−39	1	n/a	0	1	5	1	0	5	0	1	n/a	n/a	n/a	14
40−44	1	n/a	0	2	4	1	2	0	2	8	n/a	n/a	n/a	20
45−49	1	n/a	1	0	4	1	7	3	1	2	n/a	n/a	n/a	20
50−54	1	n/a	0	0	6	0	1	4	0	2	n/a	n/a	n/a	14
55−59	0	n/a	0	0	5	0	1	3	1	3	n/a	n/a	n/a	13
60−64	0	n/a	0	2	3	0	0	1	0	1	n/a	n/a	n/a	7
65+	0	n/a	0	0	1	0	1	5	0	2	n/a	n/a	n/a	9
Territories	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	7	8	3	18
<35	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	3	0	4
35−39	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	2	0	3
40−44	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2	0	1	3
45−49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	0	0	1
50−54	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	2	1	3
55−59	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	0	1	2
60−64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	1	0	2
65+	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0

See notes at end of table.   (table continued on next page)

Table G.1. Number of Male Family Physicians by Urban–Rural Category, Province/Territory and Age Group, Canada, 2004 (cont'd)

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Total Rural	179	27	202	166	808	720	234	185	439	379	7	8	3	3,357
<35	24	3	11	13	56	60	27	18	50	32	1	3	0	298
35–39	24	6	20	15	76	55	20	32	60	44	1	2	0	355
40–44	29	1	29	22	104	108	30	29	51	63	2	0	1	469
45–49	34	6	43	26	134	122	74	18	88	59	1	0	0	605
50–54	20	4	34	20	190	113	31	20	62	63	0	2	1	560
55–59	23	1	38	28	121	126	20	27	66	59	1	0	1	511
60–64	17	1	16	26	62	74	14	16	29	34	1	1	0	291
65+	8	5	11	16	65	62	18	25	33	25	0	0	0	268
Total Urban	229	69	465	311	3,840	6,139	496	500	1,640	2,624	22	10	n/a	16,345
<35	19	6	38	32	278	461	46	43	228	177	0	3	n/a	1,331
35–39	24	8	65	39	296	736	59	68	194	276	4	1	n/a	1,770
40–44	35	6	79	52	497	888	81	78	234	407	2	2	n/a	2,361
45–49	41	18	72	59	677	864	100	66	288	420	5	0	n/a	2,610
50–54	38	8	51	42	741	911	66	64	244	434	5	1	n/a	2,605
55–59	34	10	70	38	645	948	53	64	193	439	3	1	n/a	2,498
60–64	20	6	46	26	355	622	37	52	125	256	1	1	n/a	1,547
65+	18	7	44	23	351	709	54	65	134	215	2	1	n/a	1,623
Total	408	96	667	477	4,648	6,859	730	685	2,079	3,003	29	18	3	19,702
<35	43	9	49	45	334	521	73	61	278	209	1	6	0	1,629
35–39	48	14	85	54	372	791	79	100	254	320	5	3	0	2,125
40–44	64	7	108	74	601	996	111	107	285	470	4	2	1	2,830
45–49	75	24	115	85	811	986	174	84	376	479	6	0	0	3,215
50–54	58	12	85	62	931	1,024	97	84	306	497	5	3	1	3,165
55–59	57	11	108	66	766	1,074	73	91	259	498	4	1	1	3,009
60–64	37	7	62	52	417	696	51	68	154	290	2	2	0	1,838
65+	26	12	55	39	416	771	72	90	167	240	2	1	0	1,891

Notes

* For more details, please refer to section 2.5.

n/a: not applicable

"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists (see section 2.2 for details).

Source: SMDB, CIHI.

Table G.2. Number of Female Family Physicians by Urban−Rural Category, Province/Territory and Age Group, Canada, 2004

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Urban														
1,000,000+	n/a	n/a	n/a	n/a	1,679	1,649	n/a	n/a	n/a	853	n/a	n/a	n/a	4,181
<35	n/a	n/a	n/a	n/a	347	256	n/a	n/a	n/a	118	n/a	n/a	n/a	721
35−39	n/a	n/a	n/a	n/a	241	251	n/a	n/a	n/a	134	n/a	n/a	n/a	626
40−44	n/a	n/a	n/a	n/a	362	265	n/a	n/a	n/a	185	n/a	n/a	n/a	812
45−49	n/a	n/a	n/a	n/a	297	319	n/a	n/a	n/a	178	n/a	n/a	n/a	794
50−54	n/a	n/a	n/a	n/a	233	241	n/a	n/a	n/a	113	n/a	n/a	n/a	587
55−59	n/a	n/a	n/a	n/a	118	145	n/a	n/a	n/a	81	n/a	n/a	n/a	344
60−64	n/a	n/a	n/a	n/a	39	107	n/a	n/a	n/a	32	n/a	n/a	n/a	178
65+	n/a	n/a	n/a	n/a	42	65	n/a	n/a	n/a	12	n/a	n/a	n/a	119
500,000−999,999	n/a	n/a	n/a	n/a	466	745	220	n/a	876	n/a	n/a	n/a	n/a	2,307
<35	n/a	n/a	n/a	n/a	63	109	22	n/a	189	n/a	n/a	n/a	n/a	383
35−39	n/a	n/a	n/a	n/a	61	116	52	n/a	158	n/a	n/a	n/a	n/a	387
40−44	n/a	n/a	n/a	n/a	127	144	24	n/a	140	n/a	n/a	n/a	n/a	435
45−49	n/a	n/a	n/a	n/a	96	160	42	n/a	160	n/a	n/a	n/a	n/a	458
50−54	n/a	n/a	n/a	n/a	82	116	46	n/a	119	n/a	n/a	n/a	n/a	363
55−59	n/a	n/a	n/a	n/a	23	57	15	n/a	69	n/a	n/a	n/a	n/a	164
60−64	n/a	n/a	n/a	n/a	6	28	12	n/a	25	n/a	n/a	n/a	n/a	71
65+	n/a	n/a	n/a	n/a	8	15	7	n/a	16	n/a	n/a	n/a	n/a	46
100,000−499,999	91	n/a	249	113	355	819	n/a	170	n/a	249	n/a	n/a	n/a	2,046
<35	18	n/a	33	30	82	144	n/a	29	n/a	33	n/a	n/a	n/a	369
35−39	11	n/a	40	18	64	140	n/a	27	n/a	38	n/a	n/a	n/a	338
40−44	15	n/a	56	26	89	165	n/a	26	n/a	54	n/a	n/a	n/a	431
45−49	26	n/a	54	16	64	161	n/a	32	n/a	46	n/a	n/a	n/a	399
50−54	12	n/a	32	11	37	113	n/a	31	n/a	45	n/a	n/a	n/a	281
55−59	7	n/a	26	6	15	50	n/a	14	n/a	14	n/a	n/a	n/a	132
60−64	2	n/a	4	4	3	24	n/a	7	n/a	16	n/a	n/a	n/a	60
65+	0	n/a	4	2	1	22	n/a	4	n/a	3	n/a	n/a	n/a	36
50,000−99,999	n/a	24	n/a	38	125	117	n/a	n/a	54	111	n/a	n/a	n/a	469
<35	n/a	3	n/a	5	30	14	n/a	n/a	8	18	n/a	n/a	n/a	78
35−39	n/a	7	n/a	6	23	26	n/a	n/a	10	10	n/a	n/a	n/a	82
40−44	n/a	1	n/a	10	32	24	n/a	n/a	11	26	n/a	n/a	n/a	104
45−49	n/a	5	n/a	7	20	22	n/a	n/a	11	23	n/a	n/a	n/a	88
50−54	n/a	3	n/a	7	18	15	n/a	n/a	8	16	n/a	n/a	n/a	67
55−59	n/a	3	n/a	3	1	7	n/a	n/a	4	9	n/a	n/a	n/a	27
60−64	n/a	1	n/a	0	0	7	n/a	n/a	1	7	n/a	n/a	n/a	16
65+	n/a	1	n/a	0	1	2	n/a	n/a	1	2	n/a	n/a	n/a	7
25,000−49,999	9	n/a	42	n/a	254	87	19	20	29	75	n/a	n/a	n/a	535
<35	3	n/a	5	n/a	63	21	2	5	4	6	n/a	n/a	n/a	109
35−39	0	n/a	10	n/a	57	11	1	0	2	15	n/a	n/a	n/a	96
40−44	1	n/a	9	n/a	48	22	1	5	11	23	n/a	n/a	n/a	120
45−49	3	n/a	8	n/a	43	13	11	4	6	13	n/a	n/a	n/a	101
50−54	1	n/a	7	n/a	31	9	2	2	2	10	n/a	n/a	n/a	64
55−59	1	n/a	2	n/a	11	6	2	1	1	6	n/a	n/a	n/a	30
60−64	0	n/a	1	n/a	1	1	0	2	3	1	n/a	n/a	n/a	9
65+	0	n/a	0	n/a	0	4	0	1	0	1	n/a	n/a	n/a	6
10,000−24,999	22	5	n/a	37	87	57	8	18	13	48	20	15	n/a	330
<35	8	2	n/a	15	24	11	1	5	1	5	1	5	n/a	78
35−39	5	1	n/a	7	18	10	0	1	4	14	0	4	n/a	64
40−44	3	0	n/a	4	16	11	1	5	3	12	5	2	n/a	62
45−49	1	0	n/a	4	17	10	6	1	2	7	7	1	n/a	56
50−54	4	2	n/a	4	7	7	0	2	1	6	3	2	n/a	38
55−59	1	0	n/a	0	3	3	0	2	0	3	3	1	n/a	16
60−64	0	0	n/a	2	1	3	0	0	1	1	1	0	n/a	9
65+	0	0	n/a	1	1	2	0	2	1	0	0	0	n/a	7

See notes at end of table.   (table continued on next page)

Table G.2. Number of Female Family Physicians by Urban–Rural Category, Province/Territory and Age Group, Canada, 2004 (cont'd)

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Rural														
Strong MIZ	0	4	6	4	63	108	10	5	10	17	n/a	n/a	n/a	227
<35	0	0	0	2	9	20	6	3	2	3	n/a	n/a	n/a	45
35–39	0	1	2	0	14	16	2	0	2	2	n/a	n/a	n/a	39
40–44	0	1	1	2	11	30	0	0	3	6	n/a	n/a	n/a	54
45–49	0	1	1	0	17	13	2	0	0	3	n/a	n/a	n/a	37
50–54	0	0	2	0	8	16	0	1	1	1	n/a	n/a	n/a	29
55–59	0	0	0	0	2	9	0	0	2	1	n/a	n/a	n/a	14
60–64	0	1	0	0	2	3	0	0	0	1	n/a	n/a	n/a	7
65+	0	0	0	0	0	1	0	1	0	0	n/a	n/a	n/a	2
Moderate MIZ	16	2	27	37	284	98	29	6	20	49	n/a	n/a	n/a	568
<35	4	1	2	9	53	16	5	1	6	12	n/a	n/a	n/a	109
35–39	3	0	7	6	68	26	5	0	5	11	n/a	n/a	n/a	131
40–44	3	0	3	10	58	20	5	2	2	9	n/a	n/a	n/a	112
45–49	3	1	6	8	60	14	11	0	7	9	n/a	n/a	n/a	119
50–54	2	0	6	3	35	10	0	2	0	7	n/a	n/a	n/a	65
55–59	1	0	2	0	9	6	2	1	0	1	n/a	n/a	n/a	22
60–64	0	0	1	1	0	3	0	0	0	0	n/a	n/a	n/a	5
65+	0	0	0	0	1	3	1	0	0	0	n/a	n/a	n/a	5
Weak MIZ	37	0	70	37	159	116	42	37	93	115	n/a	n/a	n/a	706
<35	7	0	10	6	52	33	10	14	26	22	n/a	n/a	n/a	180
35–39	4	0	11	10	35	23	7	8	17	28	n/a	n/a	n/a	143
40–44	6	0	13	9	31	29	2	5	14	25	n/a	n/a	n/a	134
45–49	12	0	17	6	20	13	19	2	17	18	n/a	n/a	n/a	124
50–54	4	0	7	3	14	8	3	4	13	9	n/a	n/a	n/a	65
55–59	2	0	6	2	3	8	0	2	3	11	n/a	n/a	n/a	37
60–64	2	0	2	1	4	0	1	2	0	1	n/a	n/a	n/a	13
65+	0	0	4	0	0	2	0	0	3	1	n/a	n/a	n/a	10
No MIZ	0	n/a	0	3	27	1	2	7	2	5	n/a	n/a	n/a	47
<35	0	n/a	0	0	5	0	0	1	0	1	n/a	n/a	n/a	7
35–39	0	n/a	0	0	12	1	0	3	1	1	n/a	n/a	n/a	18
40–44	0	n/a	0	1	6	0	1	0	0	2	n/a	n/a	n/a	10
45–49	0	n/a	0	0	3	0	1	2	0	1	n/a	n/a	n/a	7
50–54	0	n/a	0	2	0	0	0	1	0	0	n/a	n/a	n/a	3
55–59	0	n/a	0	0	0	0	0	0	1	0	n/a	n/a	n/a	1
60–64	0	n/a	0	0	1	0	0	0	0	0	n/a	n/a	n/a	1
65+	0	n/a	0	0	0	0	0	0	0	0	n/a	n/a	n/a	0
Territories	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3	2	4	9
<35	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	0	1	2
35–39	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	1	1
40–44	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2	1	1	4
45–49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
50–54	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
55–59	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	1	0	1
60–64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
65+	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	1	1

See notes at end of table.

(table continued on next page)

Table G.2. **Number of Female Family Physicians by Urban–Rural Category, Province/Territory and Age Group, Canada, 2004 (cont'd)**

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Total Rural	53	6	103	81	533	323	83	55	125	186	3	2	4	1,557
<35	11	1	12	17	119	69	21	19	34	38	1	0	1	343
35–39	7	1	20	16	129	66	14	11	25	42	0	0	1	332
40–44	9	1	17	22	106	79	8	7	19	42	2	1	1	314
45–49	15	2	24	14	100	40	33	4	24	31	0	0	0	287
50–54	6	0	15	8	57	34	3	8	14	17	0	0	0	162
55–59	3	0	8	2	14	23	2	3	6	13	0	1	0	75
60–64	2	1	3	2	7	6	1	2	0	2	0	0	0	26
65 +	0	0	4	0	1	6	1	1	3	1	0	0	1	18
Total Urban	122	29	291	188	2,966	3,474	247	208	972	1,336	20	15	n/a	9,868
<35	29	5	38	50	609	555	25	39	202	180	1	5	n/a	1,738
35–39	16	8	50	31	464	554	53	28	174	211	0	4	n/a	1,593
40–44	19	1	65	40	674	631	26	36	165	300	5	2	n/a	1,964
45–49	30	5	62	27	537	685	59	37	179	267	7	1	n/a	1,896
50–54	17	5	39	22	408	501	48	35	130	190	3	2	n/a	1,400
55–59	9	3	28	9	171	268	17	17	74	113	3	1	n/a	713
60–64	2	1	5	6	50	170	12	9	30	57	1	0	n/a	343
65 +	0	1	4	3	53	110	7	7	18	18	0	0	n/a	221
Total	175	35	394	269	3,499	3,797	330	263	1,097	1,522	23	17	4	11,425
<35	40	6	50	67	728	624	46	58	236	218	2	5	1	2,081
35–39	23	9	70	47	593	620	67	39	199	253	0	4	1	1,925
40–44	28	2	82	62	780	710	34	43	184	342	7	3	1	2,278
45–49	45	7	86	41	637	725	92	41	203	298	7	1	0	2,183
50–54	23	5	54	30	465	535	51	43	144	207	3	2	0	1,562
55–59	12	3	36	11	185	291	19	20	80	126	3	2	0	788
60–64	4	2	8	8	57	176	13	11	30	59	1	0	0	369
65 +	0	1	8	3	54	116	8	8	21	19	0	0	1	239

Notes

* For more details, please refer to section 2.5.

n/a: not applicable

"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists (see section 2.2 for details).

Source: SMDB, CIHI.

Table G.3. Number of Male Specialist Physicians by Urban−Rural Category, Province/Territory and Age Group, Canada, 2004

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Urban														
1,000,000＋	n/a	n/a	n/a	n/a	3,247	3,926	n/a	n/a	n/a	1,785	n/a	n/a	n/a	8,958
＜35	n/a	n/a	n/a	n/a	212	343	n/a	n/a	n/a	97	n/a	n/a	n/a	652
35−39	n/a	n/a	n/a	n/a	270	433	n/a	n/a	n/a	180	n/a	n/a	n/a	883
40−44	n/a	n/a	n/a	n/a	362	442	n/a	n/a	n/a	202	n/a	n/a	n/a	1,006
45−49	n/a	n/a	n/a	n/a	461	593	n/a	n/a	n/a	270	n/a	n/a	n/a	1,324
50−54	n/a	n/a	n/a	n/a	399	572	n/a	n/a	n/a	296	n/a	n/a	n/a	1,267
55−59	n/a	n/a	n/a	n/a	434	495	n/a	n/a	n/a	282	n/a	n/a	n/a	1,211
60−64	n/a	n/a	n/a	n/a	426	390	n/a	n/a	n/a	221	n/a	n/a	n/a	1,037
65＋	n/a	n/a	n/a	n/a	683	658	n/a	n/a	n/a	237	n/a	n/a	n/a	1,578
500,000−999,999	n/a	n/a	n/a	n/a	930	1,581	663	n/a	1,812	n/a	n/a	n/a	n/a	4,986
＜35	n/a	n/a	n/a	n/a	59	116	63	n/a	212	n/a	n/a	n/a	n/a	450
35−39	n/a	n/a	n/a	n/a	65	169	65	n/a	240	n/a	n/a	n/a	n/a	539
40−44	n/a	n/a	n/a	n/a	109	187	83	n/a	223	n/a	n/a	n/a	n/a	602
45−49	n/a	n/a	n/a	n/a	151	247	118	n/a	315	n/a	n/a	n/a	n/a	831
50−54	n/a	n/a	n/a	n/a	115	256	93	n/a	303	n/a	n/a	n/a	n/a	767
55−59	n/a	n/a	n/a	n/a	136	226	97	n/a	218	n/a	n/a	n/a	n/a	677
60−64	n/a	n/a	n/a	n/a	146	185	62	n/a	142	n/a	n/a	n/a	n/a	535
65＋	n/a	n/a	n/a	n/a	149	195	82	n/a	159	n/a	n/a	n/a	n/a	585
100,000−499,999	205	n/a	538	238	561	2,093	n/a	391	n/a	528	n/a	n/a	n/a	4,554
＜35	15	n/a	33	26	45	137	n/a	31	n/a	12	n/a	n/a	n/a	299
35−39	24	n/a	59	40	69	238	n/a	46	n/a	52	n/a	n/a	n/a	528
40−44	31	n/a	77	31	75	261	n/a	53	n/a	58	n/a	n/a	n/a	586
45−49	34	n/a	93	32	89	339	n/a	63	n/a	97	n/a	n/a	n/a	747
50−54	26	n/a	87	30	68	354	n/a	60	n/a	84	n/a	n/a	n/a	709
55−59	27	n/a	68	19	90	265	n/a	49	n/a	86	n/a	n/a	n/a	604
60−64	17	n/a	67	35	52	210	n/a	36	n/a	65	n/a	n/a	n/a	482
65＋	31	n/a	54	25	73	289	n/a	53	n/a	74	n/a	n/a	n/a	599
50,000−99,999	n/a	52	n/a	67	148	353	n/a	n/a	161	271	n/a	n/a	n/a	1,052
＜35	n/a	1	n/a	3	12	15	n/a	n/a	7	8	n/a	n/a	n/a	46
35−39	n/a	5	n/a	4	31	32	n/a	n/a	17	36	n/a	n/a	n/a	125
40−44	n/a	5	n/a	12	19	47	n/a	n/a	23	39	n/a	n/a	n/a	145
45−49	n/a	14	n/a	8	13	48	n/a	n/a	31	52	n/a	n/a	n/a	166
50−54	n/a	7	n/a	10	10	54	n/a	n/a	25	50	n/a	n/a	n/a	156
55−59	n/a	7	n/a	11	19	48	n/a	n/a	33	38	n/a	n/a	n/a	156
60−64	n/a	8	n/a	10	22	39	n/a	n/a	14	25	n/a	n/a	n/a	118
65＋	n/a	5	n/a	9	22	70	n/a	n/a	11	23	n/a	n/a	n/a	140
25,000−49,999	15	n/a	78	n/a	413	196	41	27	39	132	n/a	n/a	n/a	941
＜35	0	n/a	7	n/a	43	14	3	2	3	6	n/a	n/a	n/a	78
35−39	2	n/a	6	n/a	54	18	3	5	4	13	n/a	n/a	n/a	105
40−44	4	n/a	11	n/a	58	25	3	6	6	16	n/a	n/a	n/a	129
45−49	3	n/a	15	n/a	54	29	10	3	7	21	n/a	n/a	n/a	142
50−54	1	n/a	16	n/a	51	37	6	3	9	24	n/a	n/a	n/a	147
55−59	2	n/a	9	n/a	68	26	8	1	4	17	n/a	n/a	n/a	135
60−64	3	n/a	6	n/a	46	29	4	3	2	16	n/a	n/a	n/a	109
65＋	0	n/a	8	n/a	39	18	4	4	4	19	n/a	n/a	n/a	96
10,000−24,999	26	12	n/a	51	87	50	4	19	11	46	5	11	n/a	322
＜35	2	0	n/a	3	11	2	0	0	0	0	0	0	n/a	18
35−39	3	1	n/a	10	16	5	0	0	1	3	0	1	n/a	40
40−44	4	2	n/a	9	14	1	1	6	2	7	0	5	n/a	51
45−49	5	3	n/a	11	12	8	1	3	1	4	0	0	n/a	48
50−54	3	2	n/a	2	8	9	1	2	1	12	1	4	n/a	45
55−59	2	1	n/a	3	9	8	1	1	2	4	3	0	n/a	34
60−64	3	0	n/a	8	7	9	0	4	1	5	1	1	n/a	39
65＋	4	3	n/a	5	10	8	0	3	3	11	0	0	n/a	47

See notes at end of table.   (table continued on next page)

Table G.3. Number of Male Specialist Physicians by Urban–Rural Category, Province/Territory and Age Group, Canada, 2004 (cont'd)

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Rural														
Strong MIZ	0	0	0	2	31	29	1	0	7	4	n/a	n/a	n/a	74
<35	0	0	0	0	0	1	0	0	0	0	n/a	n/a	n/a	1
35–39	0	0	0	0	0	1	1	0	0	0	n/a	n/a	n/a	2
40–44	0	0	0	0	1	3	0	0	1	0	n/a	n/a	n/a	5
45–49	0	0	0	0	0	3	0	0	0	1	n/a	n/a	n/a	4
50–54	0	0	0	0	2	3	0	0	3	0	n/a	n/a	n/a	8
55–59	0	0	0	1	3	5	0	0	2	0	n/a	n/a	n/a	11
60–64	0	0	0	0	7	4	0	0	0	1	n/a	n/a	n/a	12
65 +	0	0	0	1	18	9	0	0	1	2	n/a	n/a	n/a	31
Moderate MIZ	0	0	10	6	64	35	13	0	2	15	n/a	n/a	n/a	145
<35	0	0	0	0	4	1	0	0	0	1	n/a	n/a	n/a	6
35–39	0	0	0	0	3	1	1	0	0	0	n/a	n/a	n/a	5
40–44	0	0	0	0	5	3	5	0	0	2	n/a	n/a	n/a	15
45–49	0	0	2	1	3	4	2	0	1	3	n/a	n/a	n/a	16
50–54	0	0	3	0	4	4	3	0	0	1	n/a	n/a	n/a	15
55–59	0	0	2	3	13	3	0	0	1	2	n/a	n/a	n/a	24
60–64	0	0	0	2	9	6	1	0	0	3	n/a	n/a	n/a	21
65 +	0	0	3	0	23	13	1	0	0	3	n/a	n/a	n/a	43
Weak MIZ	19	0	60	23	73	58	13	3	20	42	n/a	n/a	n/a	311
<35	1	0	4	2	8	2	1	0	0	1	n/a	n/a	n/a	19
35–39	1	0	6	3	8	6	2	1	2	4	n/a	n/a	n/a	33
40–44	3	0	5	3	11	6	1	0	4	4	n/a	n/a	n/a	37
45–49	3	0	9	5	9	6	0	0	2	12	n/a	n/a	n/a	46
50–54	3	0	14	3	3	10	2	2	4	9	n/a	n/a	n/a	50
55–59	3	0	6	0	5	9	3	0	1	6	n/a	n/a	n/a	33
60–64	1	0	6	4	9	5	1	0	4	2	n/a	n/a	n/a	32
65 +	4	0	10	3	20	14	3	0	3	4	n/a	n/a	n/a	61
No MIZ	0	n/a	1	0	23	0	1	1	0	0	n/a	n/a	n/a	26
<35	0	n/a	0	0	4	0	0	0	0	0	n/a	n/a	n/a	4
35–39	0	n/a	0	0	5	0	0	0	0	0	n/a	n/a	n/a	5
40–44	0	n/a	0	0	2	0	0	0	0	0	n/a	n/a	n/a	2
45–49	0	n/a	0	0	3	0	0	0	0	0	n/a	n/a	n/a	3
50–54	0	n/a	0	0	3	0	0	0	0	0	n/a	n/a	n/a	3
55–59	0	n/a	0	0	3	0	0	0	0	0	n/a	n/a	n/a	3
60–64	0	n/a	1	0	1	0	0	0	0	0	n/a	n/a	n/a	2
65 +	0	n/a	0	0	2	0	1	1	0	0	n/a	n/a	n/a	4
Territories	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
<35	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
35–39	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
40–44	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
45–49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
50–54	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
55–59	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
60–64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
65 +	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0

See notes at end of table.   (table continued on next page)

Table G.3.   Number of Male Specialist Physicians by Urban–Rural Category, Province/Territory and Age Group, Canada, 2004 (cont'd)

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Total Rural	19	0	71	31	191	122	28	4	29	61	0	0	0	556
<35	1	0	4	2	16	4	1	0	0	2	0	0	0	30
35–39	1	0	6	3	16	8	4	1	2	4	0	0	0	45
40–44	3	0	5	3	19	12	6	0	5	6	0	0	0	59
45–49	3	0	11	6	15	13	2	0	3	16	0	0	0	69
50–54	3	0	17	3	12	17	5	2	7	10	0	0	0	76
55–59	3	0	8	4	24	17	3	0	4	8	0	0	0	71
60–64	1	0	7	6	26	15	2	0	4	6	0	0	0	67
65 +	4	0	13	4	63	36	5	1	4	9	0	0	0	139
Total Urban	246	64	616	356	5,386	8,199	708	437	2,023	2,762	5	11	n/a	20,813
<35	17	1	40	32	382	627	66	33	222	123	0	0	n/a	1,543
35–39	29	6	65	54	505	895	68	51	262	284	0	1	n/a	2,220
40–44	39	7	88	52	637	963	87	65	254	322	0	5	n/a	2,519
45–49	42	17	108	51	780	1,264	129	69	354	444	0	0	n/a	3,258
50–54	30	9	103	42	651	1,282	100	65	338	466	1	4	n/a	3,091
55–59	31	8	77	33	756	1,068	106	51	257	427	3	0	n/a	2,817
60–64	23	8	73	53	699	862	66	43	159	332	1	1	n/a	2,320
65 +	35	8	62	39	976	1,238	86	60	177	364	0	0	n/a	3,045
Total	265	64	687	387	5,577	8,321	736	441	2,052	2,823	5	11	0	21,369
<35	18	1	44	34	398	631	67	33	222	125	0	0	0	1,573
35–39	30	6	71	57	521	903	72	52	264	288	0	1	0	2,265
40–44	42	7	93	55	656	975	93	65	259	328	0	5	0	2,578
45–49	45	17	119	57	795	1,277	131	69	357	460	0	0	0	3,327
50–54	33	9	120	45	663	1,299	105	67	345	476	1	4	0	3,167
55–59	34	8	85	37	780	1,085	109	51	261	435	3	0	0	2,888
60–64	24	8	80	59	725	877	68	43	163	338	1	1	0	2,387
65 +	39	8	75	43	1,039	1,274	91	61	181	373	0	0	0	3,184

Notes
 * For more details, please refer to section 2.5.
 n/a: not applicable
 "Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec
 (see section 2.2 for details).

Source: SMDB, CIHI.

**Table G.4.   Number of Female Specialist Physicians by Urban–Rural Category,
Province/Territory and Age Group, Canada, 2004**

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Urban														
1,000,000+	n/a	n/a	n/a	n/a	1,471	1,614	n/a	n/a	n/a	658	n/a	n/a	n/a	3,743
<35	n/a	n/a	n/a	n/a	278	227	n/a	n/a	n/a	97	n/a	n/a	n/a	602
35–39	n/a	n/a	n/a	n/a	238	275	n/a	n/a	n/a	89	n/a	n/a	n/a	602
40–44	n/a	n/a	n/a	n/a	263	253	n/a	n/a	n/a	109	n/a	n/a	n/a	625
45–49	n/a	n/a	n/a	n/a	243	291	n/a	n/a	n/a	129	n/a	n/a	n/a	663
50–54	n/a	n/a	n/a	n/a	178	247	n/a	n/a	n/a	103	n/a	n/a	n/a	528
55–59	n/a	n/a	n/a	n/a	123	143	n/a	n/a	n/a	66	n/a	n/a	n/a	332
60–64	n/a	n/a	n/a	n/a	72	85	n/a	n/a	n/a	39	n/a	n/a	n/a	196
65+	n/a	n/a	n/a	n/a	76	93	n/a	n/a	n/a	26	n/a	n/a	n/a	195
500,000–999,999	n/a	n/a	n/a	n/a	329	735	249	n/a	643	n/a	n/a	n/a	n/a	1,956
<35	n/a	n/a	n/a	n/a	62	94	24	n/a	136	n/a	n/a	n/a	n/a	316
35–39	n/a	n/a	n/a	n/a	69	128	47	n/a	112	n/a	n/a	n/a	n/a	356
40–44	n/a	n/a	n/a	n/a	70	135	46	n/a	101	n/a	n/a	n/a	n/a	352
45–49	n/a	n/a	n/a	n/a	56	122	52	n/a	130	n/a	n/a	n/a	n/a	360
50–54	n/a	n/a	n/a	n/a	39	120	39	n/a	95	n/a	n/a	n/a	n/a	293
55–59	n/a	n/a	n/a	n/a	23	60	22	n/a	43	n/a	n/a	n/a	n/a	148
60–64	n/a	n/a	n/a	n/a	7	45	13	n/a	14	n/a	n/a	n/a	n/a	79
65+	n/a	n/a	n/a	n/a	3	31	6	n/a	12	n/a	n/a	n/a	n/a	52
100,000–499,999	89	n/a	192	81	244	561	n/a	131	n/a	121	n/a	n/a	n/a	1,419
<35	13	n/a	21	17	53	75	n/a	21	n/a	10	n/a	n/a	n/a	210
35–39	24	n/a	38	17	70	101	n/a	19	n/a	17	n/a	n/a	n/a	286
40–44	12	n/a	43	17	53	89	n/a	30	n/a	20	n/a	n/a	n/a	264
45–49	20	n/a	29	10	31	121	n/a	30	n/a	31	n/a	n/a	n/a	272
50–54	16	n/a	33	8	17	79	n/a	11	n/a	24	n/a	n/a	n/a	188
55–59	2	n/a	14	6	9	50	n/a	9	n/a	11	n/a	n/a	n/a	101
60–64	1	n/a	9	5	6	35	n/a	10	n/a	6	n/a	n/a	n/a	72
65+	1	n/a	5	1	5	11	n/a	1	n/a	2	n/a	n/a	n/a	26
50,000–99,999	n/a	12	n/a	19	76	77	n/a	n/a	30	43	n/a	n/a	n/a	257
<35	n/a	2	n/a	2	21	6	n/a	n/a	5	6	n/a	n/a	n/a	42
35–39	n/a	1	n/a	4	21	15	n/a	n/a	2	8	n/a	n/a	n/a	51
40–44	n/a	2	n/a	7	14	5	n/a	n/a	8	6	n/a	n/a	n/a	42
45–49	n/a	4	n/a	1	11	20	n/a	n/a	7	10	n/a	n/a	n/a	53
50–54	n/a	2	n/a	1	4	10	n/a	n/a	5	6	n/a	n/a	n/a	28
55–59	n/a	1	n/a	2	2	9	n/a	n/a	2	4	n/a	n/a	n/a	20
60–64	n/a	0	n/a	1	3	9	n/a	n/a	1	2	n/a	n/a	n/a	16
65+	n/a	0	n/a	1	0	3	n/a	n/a	0	1	n/a	n/a	n/a	5
25,000–49,999	3	n/a	19	n/a	191	50	6	6	9	33	n/a	n/a	n/a	317
<35	1	n/a	4	n/a	51	6	1	2	0	2	n/a	n/a	n/a	67
35–39	0	n/a	3	n/a	55	7	0	1	2	7	n/a	n/a	n/a	75
40–44	0	n/a	3	n/a	50	8	2	1	2	5	n/a	n/a	n/a	71
45–49	0	n/a	6	n/a	16	7	1	1	0	3	n/a	n/a	n/a	34
50–54	1	n/a	1	n/a	12	10	1	0	1	7	n/a	n/a	n/a	33
55–59	0	n/a	0	n/a	6	4	1	0	1	3	n/a	n/a	n/a	15
60–64	1	n/a	1	n/a	0	5	0	1	3	5	n/a	n/a	n/a	16
65+	0	n/a	1	n/a	1	3	0	0	0	1	n/a	n/a	n/a	6
10,000–24,999	5	2	n/a	13	42	14	2	1	6	11	1	3	n/a	100
<35	1	1	n/a	7	9	3	0	0	1	2	0	0	n/a	24
35–39	1	0	n/a	6	15	0	0	0	2	1	0	0	n/a	25
40–44	1	1	n/a	0	12	4	2	1	1	1	1	1	n/a	25
45–49	0	0	n/a	0	4	4	0	0	1	1	0	1	n/a	11
50–54	1	0	n/a	0	2	0	0	0	0	3	0	1	n/a	7
55–59	0	0	n/a	0	0	1	0	0	0	3	0	0	n/a	4
60–64	1	0	n/a	0	0	1	0	0	0	0	0	0	n/a	2
65+	0	0	n/a	0	0	1	0	0	1	0	0	0	n/a	2

See notes at end of table.   (table continued on next page)

Table G.4.   Number of Female Specialist Physicians by Urban–Rural Category, Province/Territory and Age Group, Canada, 2004 (cont'd)

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Rural														
Strong MIZ	0	0	0	1	4	15	0	0	3	2	n/a	n/a	n/a	25
<35	0	0	0	0	0	1	0	0	0	0	n/a	n/a	n/a	1
35–39	0	0	0	0	0	1	0	0	1	1	n/a	n/a	n/a	3
40–44	0	0	0	0	1	0	0	0	0	0	n/a	n/a	n/a	1
45–49	0	0	0	0	1	6	0	0	2	0	n/a	n/a	n/a	9
50–54	0	0	0	0	0	1	0	0	0	1	n/a	n/a	n/a	2
55–59	0	0	0	0	2	1	0	0	0	0	n/a	n/a	n/a	3
60–64	0	0	0	1	0	2	0	0	0	0	n/a	n/a	n/a	3
65+	0	0	0	0	0	3	0	0	0	0	n/a	n/a	n/a	3
Moderate MIZ	0	0	5	2	20	10	1	0	2	6	n/a	n/a	n/a	46
<35	0	0	0	1	3	0	0	0	0	2	n/a	n/a	n/a	6
35–39	0	0	1	1	6	1	0	0	0	0	n/a	n/a	n/a	9
40–44	0	0	1	0	2	1	1	0	1	0	n/a	n/a	n/a	6
45–49	0	0	0	0	3	4	0	0	1	0	n/a	n/a	n/a	8
50–54	0	0	1	0	3	2	0	0	0	1	n/a	n/a	n/a	7
55–59	0	0	1	0	1	1	0	0	0	0	n/a	n/a	n/a	3
60–64	0	0	1	0	1	1	0	0	0	1	n/a	n/a	n/a	4
65+	0	0	0	0	1	0	0	0	0	2	n/a	n/a	n/a	3
Weak MIZ	4	0	15	3	15	9	4	0	6	11	n/a	n/a	n/a	67
<35	1	0	3	1	2	1	0	0	1	0	n/a	n/a	n/a	9
35–39	0	0	0	1	3	1	1	0	0	2	n/a	n/a	n/a	8
40–44	1	0	0	0	4	2	1	0	2	4	n/a	n/a	n/a	14
45–49	1	0	3	0	4	2	1	0	1	4	n/a	n/a	n/a	16
50–54	1	0	3	0	1	2	1	0	2	0	n/a	n/a	n/a	10
55–59	0	0	3	0	1	0	0	0	0	0	n/a	n/a	n/a	4
60–64	0	0	3	1	0	1	0	0	0	0	n/a	n/a	n/a	5
65+	0	0	0	0	0	0	0	0	0	1	n/a	n/a	n/a	1
No MIZ	0	n/a	0	0	9	1	0	0	0	0	n/a	n/a	n/a	10
<35	0	n/a	0	0	5	0	0	0	0	0	n/a	n/a	n/a	5
35–39	0	n/a	0	0	3	0	0	0	0	0	n/a	n/a	n/a	3
40–44	0	n/a	0	0	1	1	0	0	0	0	n/a	n/a	n/a	2
45–49	0	n/a	0	0	0	0	0	0	0	0	n/a	n/a	n/a	0
50–54	0	n/a	0	0	0	0	0	0	0	0	n/a	n/a	n/a	0
55–59	0	n/a	0	0	0	0	0	0	0	0	n/a	n/a	n/a	0
60–64	0	n/a	0	0	0	0	0	0	0	0	n/a	n/a	n/a	0
65+	0	n/a	0	0	0	0	0	0	0	0	n/a	n/a	n/a	0
Territories	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
<35	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
35–39	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
40–44	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
45–49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
50–54	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
55–59	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
60–64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0
65+	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	0	0

See notes at end of table.   (table continued on next page)

Table G.4.   Number of Female Specialist Physicians by Urban–Rural Category, Province/Territory and Age Group, Canada, 2004 (cont'd)

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.*	N.W.T.*	Nun.*	Canada
Total Rural	4	0	20	6	48	35	5	0	11	19	0	0	0	148
<35	1	0	3	2	10	2	0	0	1	2	0	0	0	21
35–39	0	0	1	2	12	3	1	0	1	3	0	0	0	23
40–44	1	0	1	0	8	4	2	0	3	4	0	0	0	23
45–49	1	0	3	0	8	12	1	0	4	4	0	0	0	33
50–54	1	0	4	0	4	5	1	0	2	2	0	0	0	19
55–59	0	0	4	0	4	2	0	0	0	0	0	0	0	10
60–64	0	0	4	2	1	4	0	0	0	1	0	0	0	12
65+	0	0	0	0	1	3	0	0	0	3	0	0	0	7
Total Urban	97	14	211	113	2,353	3,051	257	138	688	866	1	3	n/a	7,792
<35	15	3	25	26	474	411	25	23	142	117	0	0	n/a	1,261
35–39	25	1	41	27	468	526	47	20	118	122	0	0	n/a	1,395
40–44	13	3	46	24	462	494	50	32	112	141	1	1	n/a	1,379
45–49	20	4	35	11	361	565	53	31	138	174	0	1	n/a	1,393
50–54	18	2	34	9	252	466	40	11	101	143	0	1	n/a	1,077
55–59	2	1	14	8	163	267	23	9	46	87	0	0	n/a	620
60–64	3	0	10	6	88	180	13	11	18	52	0	0	n/a	381
65+	1	0	6	2	85	142	6	1	13	30	0	0	n/a	286
Total	101	14	231	119	2,401	3,086	262	138	699	885	1	3	0	7,940
<35	16	3	28	28	484	413	25	23	143	119	0	0	0	1,282
35–39	25	1	42	29	480	529	48	20	119	125	0	0	0	1,418
40–44	14	3	47	24	470	498	52	32	115	145	1	1	0	1,402
45–49	21	4	38	11	369	577	54	31	142	178	0	1	0	1,426
50–54	19	2	38	9	256	471	41	11	103	145	0	1	0	1,096
55–59	2	1	18	8	167	269	23	9	46	87	0	0	0	630
60–64	3	0	14	8	89	184	13	11	18	53	0	0	0	393
65+	1	0	6	2	86	145	6	1	13	33	0	0	0	293

Notes

* For more details, please refer to section 2.5.

n/a: not applicable

"Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Table G.5.   Number of Family Medicine and Specialist Physicians by Graduating Country Indicator and Urban–Rural Category, Canada, 2004

Graduating Country Indicator	Family Medicine	Specialists	Total	Graduating Country Indicator	Family Medicine	Specialists	Total
Urban				**Rural**			
1,000,000+				**Strong MIZ**			
Canada	8,256	9,892	18,148	Canada	606	86	692
U.S.A.	72	188	260	U.S.A.	4	1	5
Foreign	2,373	2,625	4,998	Foreign	103	12	115
Not Stated	20	1	21	Not Stated	7	0	7
Total	10,721	12,706	23,427	Total	720	99	819
500,000–999,999				**Moderate MIZ**			
Canada	4,365	5,750	10,115	Canada	1,373	159	1,532
U.S.A.	21	37	58	U.S.A.	8	1	9
Foreign	1,060	1,156	2,216	Foreign	326	31	357
Not Stated	63	1	64	Not Stated	36	0	36
Total	5,509	6,944	12,453	Total	1,743	191	1,934
100,000–499,999				**Weak MIZ**			
Canada	4,418	4,524	8,942	Canada	1,420	269	1,689
U.S.A.	25	32	57	U.S.A.	13	6	19
Foreign	1,260	1,420	2,680	Foreign	775	105	880
Not Stated	17	0	17	Not Stated	103	0	103
Total	5,720	5,976	11,696	Total	2,311	380	2,691
50,000–99,999				**No MIZ**			
Canada	1,272	1,008	2,280	Canada	100	33	133
U.S.A.	8	6	14	U.S.A.	1	1	2
Foreign	320	296	616	Foreign	48	2	50
Not Stated	15	0	15	Not Stated	11	0	11
Total	1,615	1,310	2,925	Total	160	36	196
25,000–49,999				**Territories**			
Canada	1,213	1,037	2,250	Canada	13	0	13
U.S.A.	3	4	7	U.S.A.	0	0	0
Foreign	368	217	585	Foreign	13	0	13
Not Stated	36	2	38	Not Stated	2	0	2
Total	1,620	1,260	2,880	Total	28	0	28
10,000–24,999							
Canada	716	301	1,017				
U.S.A.	5	1	6				
Foreign	383	122	505				
Not Stated	35	0	35				
Total	1,139	424	1,563				
Total Urban				**Total Rural**			
Canada	20,240	22,512	42,752	Canada	3,512	547	4,059
U.S.A.	134	268	402	U.S.A.	26	9	35
Foreign	5,764	5,836	11,600	Foreign	1,265	150	1,415
Not Stated	186	4	190	Not Stated	159	0	159
Total	26,324	28,620	54,944	Total	4,962	706	5,668
Total							
Canada	23,752	23,059	46,811				
U.S.A.	160	277	437				
Foreign	7,029	5,986	13,015				
Not Stated	345	4	349				
Total	31,286	29,326	60,612				

Note:
"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists. "Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Source: SMDB, CIHI.

Table G.6. **Gini Coefficient and Descriptive Characteristics of Physician-to-Population Ratio by Specialty, Computed at Census Division and Provincial/Territorial Levels, Canada, 2004**

Specialty	Computations at the Census Division Level					Computations at the Provincial/Territorial Level				
	Gini Coefficient	Physicians per 10,000 Population				Gini Coefficient	Physicians per 10,000 Population			
		Minimum	Maximum	Mean	Median		Minimum	Maximum	Mean	Median
1.0 Family Medicine	0.1514	0	24	9	9	0.0604	2	18	10	10
2.0 Medical Specialists										
2.1 Clinical Specialists										
Internal Medicine	0.4423	0	6	1	0	0.0891	0	2	1	1
Medical Genetics	0.7027	0	1	0	0	0.2187	0	0	0	0
Dermatology	0.4759	0	1	0	0	0.1628	0	0	0	0
Neurology	0.5203	0	1	0	0	0.1240	0	0	0	0
Pediatrics	0.4156	0	2	0	0	0.0682	0	1	1	1
Physical Medicine and Rehabilitation	0.5058	0	1	0	0	0.0727	0	0	0	0
Psychiatry	0.4570	0	5	0	0	0.0890	0	1	1	1
Community Medicine	0.6238	0	1	0	0	0.2632	0	0	0	0
Emergency Medicine	0.5801	0	1	0	0	0.1522	0	0	0	0
Occupational Medicine	0.7431	0	0	0	0	0.3278	0	0	0	0
Anesthesia	0.3859	0	3	0	0	0.0427	0	1	1	1
Nuclear Medicine	0.5505	0	1	0	0	0.1874	0	0	0	0
Diagnostic Radiology	0.3386	0	2	0	0	0.0578	0	1	0	1
Radiation Oncology	0.5974	0	1	0	0	0.1282	0	0	0	0
2.2 Laboratory Specialists										
Medical Biochemistry	0.7543	0	0	0	0	0.4427	0	0	0	0
Medical Microbiology	0.6824	0	1	0	0	0.4048	0	0	0	0
Pathology	0.3820	0	1	0	0	0.1037	0	0	0	0
3.0 Surgical Specialists										
General Surgery	0.2849	0	2	0	0	0.0804	0	1	0	1
Cardio and Thoracic Surgery	0.5549	0	0	0	0	0.0722	0	0	0	0
Neurosurgery	0.5626	0	0	0	0	0.0902	0	0	0	0
Obstetrics and Gynecology	0.3569	0	2	0	0	0.0540	0	1	0	0
Ophthalmology	0.3872	0	1	0	0	0.0911	0	1	0	0
Otolaryngology	0.4253	0	1	0	0	0.1330	0	0	0	0
Orthopedic Surgery	0.3695	0	3	0	0	0.0619	0	0	0	0
Plastic Surgery	0.4599	0	1	0	0	0.0462	0	0	0	0
Urology	0.3865	0	1	0	0	0.0732	0	0	0	0
4.0 Medical Scientists	**0.7174**	**0**	**0**	**0**	**0**	**0.1105**	**0**	**0**	**0**	**0**
Total—All Specialists	**0.3843**	**0**	**28**	**4**	**2**	**0.0607**	**0**	**11**	**7**	**7**
Total—All Physicians	**0.2466**	**0**	**41**	**13**	**12**	**0.0486**	**2**	**21**	**17**	**18**

Note:
"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists. "Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Sources: 2004 Population Estimates, Statistics Canada; SMDB, CIHI.

Table G.7. Average Distance (km) of the General Population to the Nearest Physician and Hospital by Specialty and Urban–Rural Category, Canada, 2004

Specialty	Census Metropolitan Areas and Census Agglomerations					
	1,000,000+	500,000–999,999	100,000–499,999	50,000–99,999	25,000–49,999	10,000–24,999
1.0 Family Medicine	0.7	1.1	1.6	2.4	2.6	2.7
2.0 Medical Specialists						
2.1 Clinical Specialists						
Internal Medicine	2.2	3.5	4.5	4.8	6.5	29.2
Medical Genetics	13.2	13.9	114.8	180.8	194.1	305.4
Dermatology	3.5	6.0	12.4	33.2	93.0	185.1
Neurology	4.4	7.0	8.1	36.5	70.7	175.4
Pediatrics	2.5	4.1	5.4	6.6	14.5	55.3
Physical Medicine and Rehabilitation	5.6	6.9	15.2	72.7	104.4	238.6
Psychiatry	2.1	3.7	5.2	5.9	27.0	58.4
Community Medicine	5.7	6.5	24.1	68.5	85.0	132.6
Emergency Medicine	5.7	6.4	65.6	86.0	140.1	259.2
Occupational Medicine	12.4	9.6	200.4	182.0	215.7	335.8
Anesthesia	2.8	4.5	6.2	6.3	27.9	87.2
Nuclear Medicine	5.8	8.1	22.6	82.5	87.2	167.3
Diagnostic Radiology	2.7	4.9	5.5	5.7	14.2	80.5
Radiation Oncology	9.6	10.0	13.9	104.4	128.6	261.0
2.2 Laboratory Specialists						
Medical Biochemistry	10.2	138.2	117.0	185.1	174.8	341.8
Medical Microbiology	6.5	8.6	44.4	116.5	130.4	247.7
Pathology	4.0	5.8	6.7	6.2	17.6	119.7
3.0 Surgical Specialists						
General Surgery	2.8	4.5	5.3	5.1	8.0	39.6
Cardio and Thoracic Surgery	6.9	9.2	13.3	109.3	124.7	259.9
Neurosurgery	9.5	9.4	24.1	106.0	135.1	264.3
Obstetrics and Gynecology	3.2	5.1	5.7	6.6	5.9	54.2
Ophthalmology	3.3	5.5	5.9	5.4	34.5	91.0
Otolaryngology	3.6	6.9	6.6	32.8	67.7	166.3
Orthopedic Surgery	3.6	5.7	6.3	6.7	34.2	129.3
Plastic Surgery	4.4	7.2	8.8	26.3	92.3	182.9
Urology	4.2	7.4	6.4	7.6	48.1	123.0
4.0 Medical Scientists	15.5	9.7	148.5	182.5	197.2	327.3
Total—All Specialists	1.1	2.0	2.9	3.4	3.6	6.8
Total—All Physicians	0.7	1.1	1.5	2.2	2.5	2.7
General Hospital Without Long-Term Care	13.2	54.6	43.9	79.5	89.7	87.6
General Hospital With Long-Term Care	5.7	7.2	12.4	11.7	14.8	49.0

See notes at end of table. (table continued on next page)

Table G.7. Average Distance (km) of the General Population to the Nearest Physician and Hospital by Specialty and Urban−Rural Category, Canada, 2004 (cont'd)

Specialty	Rural and Small Town Canada					Canada
	Strong MIZ	Moderate MIZ	Weak MIZ	No MIZ	Territories	
1.0 Family Medicine	7.0	9.0	10.5	33.7	201.6	3.5
2.0 Medical Specialists						
2.1 Clinical Specialists						
Internal Medicine	19.4	35.7	82.1	129.7	705.0	15.2
Medical Genetics	109.1	147.5	271.7	330.5	1,617.2	94.4
Dermatology	40.6	73.4	165.9	228.1	1,482.5	38.9
Neurology	37.5	71.1	150.3	215.4	1,434.4	35.9
Pediatrics	24.4	48.3	103.3	149.2	845.5	19.8
Physical Medicine and Rehabilitation	51.2	83.4	185.5	250.4	1,578.1	47.2
Psychiatry	20.2	41.2	91.9	144.0	957.3	18.8
Community Medicine	50.3	81.2	159.0	206.0	923.5	41.2
Emergency Medicine	62.0	103.9	212.9	309.2	1,291.7	63.0
Occupational Medicine	125.8	234.8	360.2	386.8	1,379.2	124.0
Anesthesia	24.0	45.4	109.7	175.3	1,142.4	22.5
Nuclear Medicine	48.9	83.3	174.8	235.7	1,403.8	45.3
Diagnostic Radiology	21.5	40.5	91.6	150.8	1,271.6	19.9
Radiation Oncology	68.8	102.0	198.0	265.0	1,584.2	55.4
2.2 Laboratory Specialists						
Medical Biochemistry	125.4	199.9	327.6	389.9	1,587.2	122.7
Medical Microbiology	70.4	97.6	203.3	260.1	1,545.7	59.9
Pathology	26.9	49.4	114.7	164.4	1,247.8	24.5
3.0 Surgical Specialists						
General Surgery	18.9	34.1	69.5	123.3	1,004.7	15.6
Cardio and Thoracic Surgery	63.8	101.7	195.2	263.0	1,577.6	53.8
Neurosurgery	70.6	103.0	201.4	270.1	1,583.5	58.0
Obstetrics and Gynecology	22.7	43.8	100.5	157.9	884.1	19.4
Ophthalmology	25.2	49.0	113.5	178.0	995.6	23.5
Otolaryngology	39.3	65.6	159.5	227.3	1,016.6	34.4
Orthopedic Surgery	27.3	52.6	124.7	186.0	1,013.1	26.0
Plastic Surgery	43.3	77.8	159.5	232.6	1,483.7	38.3
Urology	29.3	57.9	136.7	206.3	1,395.2	29.2
4.0 Medical Scientists	**118.7**	**183.3**	**295.5**	**366.8**	**1,617.8**	**106.5**
Total—All Specialists	**13.1**	**25.4**	**51.6**	**90.4**	**674.8**	**9.9**
Total—All Physicians	**6.8**	**8.9**	**10.4**	**33.6**	**201.6**	**3.4**
General Hospital Without Long-Term Care	**53.9**	**76.6**	**80.6**	**100.5**	**591.7**	**47.3**
General Hospital With Long-Term Care	**21.2**	**30.4**	**48.9**	**84.9**	**508.4**	**16.3**

Note:
"Family medicine" includes certificants of the College of Family Physicians of Canada or the Collège des médecins du Québec (family medicine), general practitioners not certified in Canada, foreign-certified specialists and other non-certified specialists. "Specialists" includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec (see section 2.2 for details).

Sources: 2001 Census, Statistics Canada; SMDB, CIHI.

Table G.8. Average Full-Time Equivalent for Fee-for-Service Physicians by Age Group and Province, Canada, 2002

	<35	35–39	40–44	45–49	50–54	55–59	60–64	65+	Not Stated	Total
N.L.	0.3782	0.5583	0.6799	0.8198	0.8240	1.0006	0.8944	0.6180	n/a	0.7056
P.E.I.	0.6045	0.6988	0.8882	0.9319	0.9277	1.0013	1.0019	0.7320	0.0825	0.8278
N.S.	0.3789	0.6091	0.6951	0.7665	0.8377	0.8363	0.7353	0.5568	0.6862	0.6916
N.B.	0.5712	0.7051	0.7500	0.8648	0.8804	0.9044	0.8903	0.5349	0.5755	0.7579
Que.	0.6695	0.8210	0.8513	0.8676	0.8467	0.8665	0.8358	0.6634	0.7167	0.8133
Ont.	0.6675	0.8406	0.9293	0.9785	1.0219	1.0470	0.9622	0.7131	0.0890	0.8956
Man.	0.5962	0.6704	0.7945	0.9105	0.8595	1.0044	0.9274	0.6752	0.0800	0.8017
Sask.	0.6461	0.7830	0.8301	0.9205	0.8714	0.9620	0.9220	0.7466	n/a	0.8303
Alta.	0.6630	0.7651	0.8468	0.8915	0.9255	0.9227	0.8663	0.6357	0.6900	0.8241
B.C.	0.5490	0.7183	0.7761	0.8046	0.8422	0.8284	0.7745	0.5342	0.6113	0.7479
Canada	0.6342	0.7879	0.8551	0.9016	0.9226	0.9444	0.8865	0.6668	0.2742	0.8307

Note:

n/a: not applicable

Source: NPDB, CIHI.

Table G.9. Number of Fee-for-Service Physicians by Specialty and Urban−Rural Category, Canada, 2002

Specialty	Census Metropolitan Areas and Census Agglomerations					
	1,000,000+	500,000−999,999	100,000−499,999	50,000−99,999	25,000−49,999	10,000−24,999
1.0 Family Medicine	9,876	4,969	5,433	1,502	1,519	967
2.0 Medical Specialists						
Internal Medicine	2,770	1,466	1,145	205	212	88
Dermatology	277	110	85	14	13	5
Neurology	301	156	133	17	12	8
Pediatrics	991	570	386	85	94	26
Physical Medicine and Rehabilitation	136	92	67	12	3	1
Psychiatry	1,961	917	635	140	125	43
Anesthesia	908	616	582	122	117	36
3.0 Surgical Specialists						
General Surgery	601	309	375	123	139	97
Cardio and Thoracic Surgery	110	70	74	7	2	1
Neurosurgery	95	51	57	3	0	0
Obstetrics and Gynecology	635	350	330	105	112	41
Opthalmology	440	223	253	78	67	30
Otolaryngology	234	110	143	34	31	19
Orthopedic Surgery	403	248	276	92	76	31
Plastic Surgery	190	89	99	23	10	3
Urology	198	99	148	48	42	12
Total−All Physicians	**20,126**	**10,445**	**10,221**	**2,610**	**2,574**	**1,408**

Specialty	Rural and Small Town Canada				Unknown	Canada
	Strong MIZ	Moderate MIZ	Weak MIZ	No MIZ		
1.0 Family Medicine	670	1,590	1,827	130	737	29,220
2.0 Medical Specialists						
Internal Medicine	11	29	82	7	42	6,057
Dermatology	1	3	2	0	1	511
Neurology	1	0	2	0	3	633
Pediatrics	3	6	17	3	12	2,193
Physical Medicine and Rehabilitation	0	3	2	0	1	317
Psychiatry	19	42	44	6	23	3,955
Anesthesia	23	16	24	2	21	2,467
3.0 Surgical Specialists						
General Surgery	20	45	105	4	21	1,839
Cardio and Thoracic Surgery	0	1	0	0	1	266
Neurosurgery	0	0	0	0	1	207
Obstetrics and Gynecology	8	10	28	1	9	1,629
Opthalmology	4	5	21	2	2	1,125
Otolaryngology	1	6	7	1	4	590
Orthopedic Surgery	3	7	12	4	12	1,164
Plastic Surgery	1	2	2	0	4	423
Urology	0	1	4	0	0	552
Total−All Physicians	**765**	**1,766**	**2,179**	**160**	**894**	**53,148**

Source: NPDB, CIHI.

Table G.10. Average Full-Time Equivalent for Fee-for-Service Physicians by Specialty and Urban−Rural Category, Canada, 2002

Specialty	Census Metropolitan Areas and Census Agglomerations					
	1,000,000+	500,000–999,999	100,000–499,999	50,000–99,999	25,000–49,999	10,000–24,999
1.0 Family Medicine	0.8606	0.7460	0.7908	0.8665	0.8814	0.8535
2.0 Medical Specialists						
Internal Medicine	0.8637	0.7581	0.9143	1.1028	0.9818	0.7900
Dermatology	0.8464	0.9735	0.8650	0.9807	0.8646	0.3962
Neurology	0.8197	0.7051	1.0680	1.0882	0.9300	1.0350
Pediatrics	0.8558	0.7217	0.7634	1.0205	0.7901	0.7173
Physical Medicine and Rehabilitation	0.9288	0.9322	0.7294	1.1042	0.9700	1.0000
Psychiatry	0.8781	0.9377	0.8739	0.8851	0.9390	0.8414
Anesthesia	0.9035	0.8198	0.8944	0.9425	0.8494	0.6326
3.0 Surgical Specialists						
General Surgery	0.8266	0.8020	0.8490	0.9613	0.8359	0.7439
Cardio and Thoracic Surgery	0.8611	0.8862	0.7988	0.8814	1.0000	1.0000
Neurosurgery	0.8023	0.7961	0.7232	0.9033		
Obstetrics and Gynecology	0.8960	0.8389	0.8266	0.8122	0.7593	0.6454
Opthalmology	0.8873	0.9456	0.9104	0.9468	1.0606	0.5687
Otolaryngology	0.8613	0.9122	0.8425	0.8224	0.8158	0.7385
Orthopedic Surgery	0.8026	0.7876	0.8430	0.8884	0.8409	0.7704
Plastic Surgery	0.8264	0.9401	0.9850	0.8804	0.8700	1.0000
Urology	0.9392	0.8286	0.8912	0.8335	0.8855	0.7050
Total—All Physicians	0.8638	0.7864	0.8299	0.9023	0.8830	0.8166

Specialty	Rural and Small Town Canada				Unknown	Canada
	Strong MIZ	Moderate MIZ	Weak MIZ	No MIZ		
1.0 Family Medicine	0.8488	0.7504	0.7231	0.6919	0.8184	0.8126
2.0 Medical Specialists						
Internal Medicine	0.5228	0.8156	0.8266	0.9386	0.3050	0.8537
Dermatology	0.6900	0.4170	0.5800	0.0000	1.6000	0.8742
Neurology	1.9000	0.0000	0.4650	0.0000	0.3833	0.8542
Pediatrics	0.5367	0.7150	0.6402	0.3767	0.4042	0.8010
Physical Medicine and Rehabilitation	0.0000	1.0467	1.2100	0.0000	1.0000	0.8980
Psychiatry	0.6484	0.9205	0.6655	1.0567	0.3944	0.8875
Anesthesia	0.9087	0.5956	0.4053	0.5050	0.2929	0.8635
3.0 Surgical Specialists						
General Surgery	0.5215	0.7078	0.6514	0.3128	0.4548	0.8108
Cardio and Thoracic Surgery	0.0000	0.4300	0.0000	0.0000	0.6000	0.8499
Neurosurgery	0.0000	0.0000	0.0000	0.0000	0.5600	0.7793
Obstetrics and Gynecology	0.4164	0.4050	0.4084	0.8600	0.3434	0.8317
Opthalmology	0.3400	1.0120	0.8729	0.4950	0.2300	0.9065
Otolaryngology	1.0000	0.5850	0.8143	0.9500	0.6200	0.8530
Orthopedic Surgery	0.3733	0.8671	0.7759	0.3400	0.3701	0.8103
Plastic Surgery	0.1600	0.7250	1.0350	0.0000	0.7200	0.8906
Urology	0.0000	1.1600	1.0150	0.0000	0.0000	0.8891
Total—All Physicians	0.8226	0.7516	0.7172	0.6900	0.7426	0.8307

Source: NPDB, CIHI.

Table G.11. Full-Time Equivalent Adjusted Number of Fee-for-Service Physicians by Specialty and Urban–Rural Category, Canada, 2002

Specialty	Census Metropolitan Areas and Census Agglomerations					
	1,000,000+	500,000–999,999	100,000–499,999	50,000–99,999	25,000–49,999	10,000–24,999
1.0 Family Medicine	8,499.3	3,706.9	4,296.4	1,301.5	1,338.8	825.3
2.0 Medical Specialists						
Internal Medicine	2,392.4	1,111.4	1,046.9	226.1	208.1	69.5
Dermatology	234.5	107.1	73.5	13.7	11.2	2.0
Neurology	246.7	110.0	142.0	18.5	11.2	8.3
Pediatrics	848.1	411.4	294.7	86.7	74.3	18.6
Physical Medicine and Rehabilitation	126.3	85.8	48.9	13.3	2.9	1.0
Psychiatry	1,722.0	859.9	554.9	123.9	117.4	36.2
Anesthesia	820.4	505.0	520.5	115.0	99.4	22.8
3.0 Surgical Specialists						
General Surgery	496.8	247.8	318.4	118.2	116.2	72.2
Cardio and Thoracic Surgery	94.7	62.0	59.1	6.2	2.0	1.0
Neurosurgery	76.2	40.6	41.2	2.7	0.0	0.0
Obstetrics and Gynecology	569.0	293.6	272.8	85.3	85.0	26.5
Opthalmology	390.4	210.9	230.3	73.9	71.1	17.1
Otolaryngology	201.5	100.3	120.5	28.0	25.3	14.0
Orthopedic Surgery	323.4	195.3	232.7	81.7	63.9	23.9
Plastic Surgery	157.0	83.7	97.5	20.2	8.7	3.0
Urology	186.0	82.0	131.9	40.0	37.2	8.5
Total—All Physicians	**17,384.8**	**8,213.9**	**8,482.4**	**2,355.0**	**2,272.8**	**1,149.8**

Specialty	Rural and Small Town Canada				Unknown	Canada
	Strong MIZ	Moderate MIZ	Weak MIZ	No MIZ		
1.0 Family Medicine	568.7	1,193.1	1,321.1	89.9	603.2	23,744.2
2.0 Medical Specialists						
Internal Medicine	5.8	23.7	67.8	6.6	12.8	5,170.9
Dermatology	0.7	1.3	1.2	0.0	1.6	446.7
Neurology	1.9	0.0	0.9	0.0	1.1	540.7
Pediatrics	1.6	4.3	10.9	1.1	4.9	1,756.6
Physical Medicine and Rehabilitation	0.0	3.1	2.4	0.0	1.0	284.7
Psychiatry	12.3	38.7	29.3	6.3	9.1	3,510.1
Anesthesia	20.9	9.5	9.7	1.0	6.2	2,130.3
3.0 Surgical Specialists						
General Surgery	10.4	31.9	68.4	1.3	9.6	1,491.1
Cardio and Thoracic Surgery	0.0	0.4	0.0	0.0	0.6	226.1
Neurosurgery	0.0	0.0	0.0	0.0	0.6	161.3
Obstetrics and Gynecology	3.3	4.1	11.4	0.9	3.1	1,354.8
Opthalmology	1.4	5.1	18.3	1.0	0.5	1,019.8
Otolaryngology	1.0	3.5	5.7	0.9	2.5	503.3
Orthopedic Surgery	1.1	6.1	9.3	1.4	4.4	943.2
Plastic Surgery	0.2	1.5	2.1	0.0	2.9	376.7
Urology	0.0	1.2	4.1	0.0	0.0	490.8
Total—All Physicians	**629.3**	**1,327.3**	**1,562.8**	**110.4**	**663.9**	**44,150.0**

Source: NPDB, CIHI.

Table G.12. Percentage of Family Medicine Physicians Who Include Selected Activities/Procedures in Their Practice by Urban–Rural Category, Canada, 2004

Selected Practice Characteristic	Census Metropolitan Areas and Census Agglomerations			Rural and Small Town Canada			Canada
	1,000,000+	100,000–999,999	10,000–99,999	Strong MIZ	Moderate MIZ	Weak/ No MIZ/ Territories	
Areas of Professional Activity							
Primary Care	81.3%	78.6%	79.5%	91.5%	90.8%	88.9%	81.6%
Adolescent Medicine	33.1%	39.0%	39.3%	41.7%	40.5%	43.7%	37.8%
Women's Health Care	35.0%	36.7%	34.9%	33.6%	38.9%	42.6%	36.5%
Preventive Medicine	30.9%	34.7%	30.9%	35.9%	36.6%	39.8%	33.6%
Psychotherapy and Counselling	42.9%	44.0%	38.7%	44.0%	46.5%	42.3%	42.9%
Cancer Care and Oncology	19.5%	27.0%	33.2%	32.7%	40.5%	41.8%	27.9%
Cardiology	28.6%	31.2%	33.7%	39.0%	43.8%	44.9%	33.0%
Chronic Disease Management	47.2%	49.9%	53.4%	55.6%	63.8%	65.4%	52.0%
Geriatric Medicine	45.6%	50.0%	52.4%	63.7%	68.7%	64.8%	51.9%
Palliative Care	27.7%	38.7%	43.7%	48.4%	56.5%	53.4%	38.8%
Home Care	19.7%	22.9%	26.4%	39.5%	40.6%	30.1%	24.6%
Emergency Medicine	15.3%	19.8%	36.8%	41.3%	53.5%	73.9%	28.4%
Hospitalist Care	12.1%	14.7%	31.7%	27.8%	32.5%	40.4%	20.1%
Surgical Assisting	10.5%	12.3%	27.4%	22.9%	18.7%	24.0%	15.6%
Involvement in Maternity and Newborn Care							
Prenatal and Antenatal	41.9%	53.0%	50.7%	60.8%	67.6%	69.2%	51.9%
Intrapartum Care	8.5%	10.1%	23.2%	17.8%	17.0%	32.9%	14.2%
Postpartum Care	38.6%	46.3%	48.1%	56.5%	60.6%	64.9%	47.1%
Newborn Care	50.7%	54.5%	57.1%	60.8%	63.6%	66.7%	55.6%
Selected Procedures							
Aspiration and Injection of Joints	50.1%	59.9%	71.3%	78.0%	83.1%	86.2%	63.0%
Casting and Splinting	27.9%	35.7%	55.0%	58.9%	67.7%	83.4%	43.3%
Endometrial Aspiration	11.6%	14.5%	14.3%	18.2%	26.1%	38.3%	16.7%
Lumbar Puncture	11.5%	14.0%	29.3%	18.2%	28.0%	49.6%	19.8%
Removal of Superficial Skin Lesions	55.5%	66.5%	71.5%	86.0%	84.8%	88.1%	67.6%
Skin Biopsy	32.6%	48.1%	57.4%	65.0%	65.0%	78.2%	49.1%
Toenail Surgery	34.4%	42.3%	53.8%	61.7%	69.2%	73.0%	46.7%

Source: 2004 NPS, College of Family Physicians of Canada, Canadian Medical Association and Royal College of Physicians and Surgeons of Canada.

Table G.13. Percentage of Family Medicine Physicians Who Changed or Plan to Change Their Practice by Urban–Rural Category, Canada, 2004

Selected Practice Change	Census Metropolitan Areas and Census Agglomerations			Rural and Small Town Canada			Canada
	1,000,000+	100,000–999,999	10,000–99,999	Strong MIZ	Moderate MIZ	Weak/No MIZ/Territories	
Changes Made to Practice in Past Two Years							
Expanded Scope of Practice	5.0%	4.9%	5.6%	4.3%	4.4%	7.0%	5.2%
Reduced Scope of Practice	14.2%	16.1%	17.7%	17.1%	12.1%	10.4%	15.0%
Specialized in an Area of Medical Practice	4.6%	5.6%	5.0%	4.3%	2.9%	2.7%	4.7%
Changes to Practice Planned for the Next Two Years							
Plan to Expand Scope of Practice	5.2%	5.7%	4.6%	3.8%	6.0%	6.6%	5.4%
Plan to Reduce Scope of Practice	15.3%	14.5%	17.0%	10.4%	15.2%	15.8%	15.1%
Plan to Specialize in an Area of Medical Practice	4.3%	4.8%	3.8%	5.2%	3.8%	7.3%	4.7%

Source: 2004 NPS, College of Family Physicians of Canada, Canadian Medical Association and Royal College of Physicians and Surgeons of Canada.