Distribution and Internal Migration of Canada's Physician Workforce

Health Human Resources

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The analyses of the distribution and internal migration patterns of physicians are based on data from Scott's Medical Database.

Distribution and Internal Migration Series

This document is part of a series examining the geographical distribution and internal migration of various groups of health professionals within Canada.

Reports in this series cover the following occupations:

- Audiologists and speech-language pathologists;
- Dental assistants;
- Dental hygienists and dental therapists;
- Dentists;
- Licensed practical nurses;
- Medical laboratory technicians;
- Medical laboratory technologists and pathologists' assistants;
- Medical radiation technologists;
- Medical sonographers;
- Occupational therapists;
- Pharmacists;
- Physicians (specialist physicians and general practitioners/family physicians);
- Physiotherapists;
- Registered nurses (including registered psychiatric nurses, head nurses and supervisors); and
- Respiratory therapists, clinical perfusionists and cardiopulmonary technologists.

Executive Summary

Introduction

Health care is a complex enterprise, relying heavily on the skills and efforts of many individuals. While this workforce is relatively large in Canada, it is often not evenly distributed geographically in relationship to the distribution of the general population. This distribution of health care providers is constantly being modified by internal migration, movements of health care workers within provinces or territories or from one province or territory to another.

For most health care providers in Canada, there have been very few studies undertaken of their geographic distribution and mobility. That stems primarily from the fact that there are inadequate sources of data upon which to base such analyses. However, and in spite of its limitations, the Canadian Census of Population can provide some of this information. But it has yet to be fully exploited.

This publication is derived from a study, primarily based on the Census, that begins an exploration of the geographical distribution and internal migration patterns of more than 20 health care providers in Canada. For each profession in the study, either a report or a series of graphs and tables—available from the Canadian Institute for Health Information (CIHI) website (at www.cihi.ca)—have been prepared. For each health care occupation, the reports provide:

- Preliminary, empirical analyses of their numbers and selected demographic characteristics;
- An examination of provincial, territorial and summary subprovincial geographic distributions;
- Initial analyses of their internal (interprovincial and intraprovincial)[i] mobility patterns; and
- For each of the descriptive categories listed above, temporal comparisons using data from 1991, 1996 and 2001.

Highlights

The present report deals with the Canadian physician workforce as part of the CIHI *Distribution and Internal Migration* series of publications. It differs from the other reports in the series in three ways. First, the majority of the data that are employed come from Scott's Medical Database (SMDB) (formerly known as the Southam Medical Database). Census data are used in a limited way and only to complement SMDB information where necessary. Second, less attention has been paid to some of the basic geographical parameters of physician distribution, as those have been included in a number of recent reports published by CIHI.[4, 10] And third, in addition to the key census years (1991, 1996 and 2001) used in the other publications in the *Distribution and Internal Migration* series,

i. Intraprovincial migrants include individuals who lived in the same province or territory, but in a different city, town, village, township, municipality or Indian reserve five-years prior to the census year. Interprovincial migrants include those who lived in a different province or territory five-years prior to the census year.

some elements of the spatial distribution and mobility of Canadian physicians are examined using all years of SMDB data from 1986 to 2004 (inclusive). Some of the findings from this study are highlighted below:

Physician Supply and Descriptive Characteristics

- In 2004, Scott's Medical Database recorded a total of 60,612 physicians in Canada, an increase of approximately 33% from 1986.
- During this period, the total population of Canada increased by 22%.
- In common with the general population and most occupational groups, the physician workforce in Canada is aging.
- The average age of Canadian physicians increased from 45.6 years in 1986 to 48.6 years in 2004.
- In 1986, 18% of all physicians in Canada were female, but this proportion steadily increased to 32% in 2004.
- The proportions of French-speaking physicians (that is, physicians who requested that Scott's Directories communicate with them in French) in Canada varied from a low of 22% in 1989 to a high of approximately 24% from 1997 to 2001 and again in 2004.
- In terms of the two broad categories of physician specialties (family medicine physicians and specialist physicians), the proportions of specialists ranged from a low of 46.8% in 1993 to a high of 49.6% in 2000. By 2004, 48.4% of Canada's physicians were specialists.
- There was a steady decrease in the proportions of the physician workforce in Canada who had obtained their medical degree from a foreign medical school (international medical graduates or IMGs), from 28% in 1986 to 22% in 2004.
- Small variations in the proportions of physicians in Canada who were located in rural and small-town areas of the country occurred.

Internal Migration Patterns

Overview

- On average each year, approximately 6% of physicians can be classified as either intraprovincial or interprovincial migrants.
- Each year, an average of 1.4% of Canada's physicians move from one province or territory to another.
- Close to 5% of active physicians moved from one community to another within the same province/territory for each year from 1986 to 2004.
- The highest proportions of physicians who were intraprovincial migrants occurred in 1991–1992 (6.5%) and in 1997–1998 (5.9%); the lowest (2.9%) in 2002–2003.
- Rural areas of Canada had net losses of physicians through migration in all of the five-year migration periods (1986 to 1991, 1991 to 1996 and 1996 to 2001) included in this study. (See Table 1.)
- By way of comparison, rural net losses were also common for the general population, except from 1991 to 1996, when net gains were experienced. (See Table 2.)

Age

- Younger physicians are more likely to migrate than older physicians.
- Interprovincial migrants are on average younger than intraprovincial migrants who, in turn, are younger than non-migrants.
- While it is true that younger physicians have a higher propensity to migrate internally than older physicians, older physicians in Canada are increasingly mobile.
- In the 1986–1987 migration period, the average ages were 37.2 years, 39.0 years and 45.8 years for interprovincial migrants, intraprovincial migrants and non-migrants, respectively. By 2003–2004, the average ages for those groups of physicians were 40.0 years, 44.6 years and 48.5 years, respectively.

Sex

- In the earlier years of this study period, higher proportions of female physicians were internal migrants than male physicians.
- The differences between the two have decreased, especially with respect to interprovincial migration, where the proportions for both female and male physicians are now very similar.
- Higher proportions of female physicians moved from community to community (intraprovincial migration) than their male counterparts.

Language

- Higher proportions of English-speaking physicians migrated interprovincially.
- The opposite is true for intraprovincial migration, where French-speaking physicians were more than twice as likely as English-speaking physicians to move from one community to another.

Broad Physicians Specialty Categories

- The internal migration patterns of physicians by specialty category are complex, with higher proportions of migrant specialists than migrant family physicians in some years but not others. This is especially the case with interprovincial migration.
- On the other hand, higher proportions of family medicine physicians than specialists migrated intraprovincially.

Place of Graduation

- International medical graduates (IMGs) were more likely to move from one province or territory to another than non-IMGs, especially since 1997.
- Graduates of Canadian medical schools, however, were more mobile intraprovincially.

Rural Physicians

- Throughout the study period, rural physicians were more mobile in all forms of internal migration than physicians located in urban areas of the country.

Migration Destinations

- Magnet provinces (large provinces such as Ontario, Alberta and British Columbia) followed by neighbouring provinces usually attracted the largest number of interprovincial physician migrants.
- As magnet provinces, Ontario, and particularly B.C., were the principal destinations for interprovincial migrants in the earlier years of this study. However in recent years, Alberta became the primary destination for physicians who chose to move from one province or territory to another.
- B.C. was the only province where there was a positive net-migration count (that is, more physicians moved to the province than moved away) in each of the one-year migration periods from 1986–1987 to 2003–2004.
- In comparison, Newfoundland and Labrador, Manitoba and Saskatchewan had a negative net-migration count (that is, more physicians moved away than moved to these provinces) in each of the one-year migration periods from 1986–1987 to 2003–2004.

Physician-to-Population Ratios

- In general, the number of active physicians per 100,000 population in Canada increased over the period from 1986 to 1993, followed by a decrease in the ratio from 1993 to 1997. Since that time, the ratios have been increasing. (See Figure 34.)
- During the period from 1986 to 2004, the highest ratio occurred in 1993 when there were 192 physicians per 100,000 population. With the ratios increasing in more recent years, the 2004 physician-to-population ratio was very similar, at 190 physicians per 100,000 population.
- Interprovincial migration has adversely impacted some provinces, decreasing the ratios in provinces such as Newfoundland and Labrador, Quebec, Manitoba and Saskatchewan.
- Conversely, overall increases in the ratios have occurred most commonly in B.C. and more recently in Alberta.

Migration Frequency

- Although there are some differential impacts due to physician characteristics (sex, language, specialty, etc.), the frequency and timing of internal migration by physicians tends to be similar. Based on a limited sample, physicians who migrate interprovincially tend to do so, on average, between one and two times over the study period; if a physician is going to move out of a province or territory, he or she will usually do so within the first five years of establishing a medical practice.
- Physicians' length of practice in rural areas of the country (9.5 years on average) tends to be shorter than practices in urban areas (12.6 years on average).
- Rural physicians tend to be more mobile than their urban colleagues; their mobility patterns include movement away from rural areas of the country, which decreases the average length of rural practice; however, length of rural practice is greater if a physician's first year of practice is in a rural location.

Introduction

Health care is a complex enterprise, relying heavily on the skills and efforts of many individuals. In Canada, more than 1 million people, close to 1 in 10 employed Canadians, work in health and social services.[1, 2] It is recognized that "none of the pressing challenges facing Canada's health care system can be met without focusing on the people who make the system work."[3] While this workforce is relatively large, it is not evenly distributed geographically in relation to the distribution of Canadians as a whole.[4, 5] As well, the geographical distribution of Canada's health care workforce is constantly being modified by internal migration, movement of health care workers within provinces or territories or from one province or territory to another.

For example, Professor John Helliwell, an economist at the University of British Columbia, is quoted as saying that, "the interprovincial flow of physicians is far larger than the flow to the U.S. Maldistribution is as much or more of a problem than migration southward." (This can be found in a short commentary written in 1999 by Charlotte Gray in the *Canadian Medical Association Journal*.[6])

The issue of internal migration of health professionals in Canada has been the subject of some debate in recent years. The following examples of media coverage and public commentary highlight the public interest in this topic.

- "In the midst of one of Nova Scotia's worst health-care labour disputes, disgruntled lab technologists flocked yesterday to the welcoming arms of an Alberta recruiter." (2001 Canadian Press article carried by *The Globe and Mail*)
- "Within Canada, inter-provincial migration is not a big concern, although the urban–rural balance is."[7] On the other hand, it has been observed that, "a majority of RNs, whose migration is associated with going to school after their initial nursing education, do not return to the jurisdiction where they were first registered."[8]
- "Recruitment and retention strategies are being pursued by every province as they grapple with chronic shortages of physicians (both GPs and specialists), nurses, radiation technologists and other professionals. Provincial health ministers are openly complaining about bidding wars between provinces over a dwindling resource pool, with everyone trying to outdo the other with signing bonuses and other contractual bells-and-whistles."[9]

The quotations above are based on personal views, with little supporting documentary evidence. The fact is, we have very little information about the relative distribution and migration patterns of most health professionals in Canada. This stems primarily from the fact that there are limited sources of data upon which to base such analyses. However, the Canadian Census of Population from Statistics Canada, in spite of its limitations, can provide some of this information. Based on census data, an exploration of the geographical distribution and internal migration patterns of more than 20 health care provider groups in Canada was initiated by the Canadian Institute for Health Information (CIHI) in collaboration with Statistics Canada and Dr. Roger Pitblado of Laurentian University. For each profession in the study, either a report or set of data tables (available from the CIHI website at www.cihi.ca) was prepared. For each health occupation, the reports provide the following:

- Preliminary, empirical analyses of numbers and selected demographic characteristics;
- An examination of provincial/territorial and summary subprovincial geographical distributions;
- Initial analyses of internal (interprovincial and intraprovincial[ii]) mobility patterns; and
- For each of the descriptive characteristics, temporal comparisons using data from the Canadian Census of Population for 1991, 1996 and 2001.

A list of all of the health occupations included in the study may be found in the methodological notes (Appendix A).

The present report deals with Canadian physicians and is included in the CIHI *Distribution and Internal Migration* series of publications. But it differs from the other reports in the series in three ways. First, the majority of the data that are employed come from Scott's Medical Database (SMDB) (formerly known as the Southam Medical Database). Census data are used in a limited way and only to complement the SMDB information where necessary. Second, less attention has been paid to some of the basic geographical parameters of physician distribution, as those have been included in a number of recent reports published by CIHI.[4, 10] And third, in addition to the key census years (1991, 1996 and 2001) used in the other publications in the *Distribution and Internal Migration* series, some elements of the spatial distribution and mobility of Canadian physicians are examined using comparisons of all years of SMDB data from 1986 to 2004 (inclusive).

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As much as possible, this report does not duplicate the results that may be found in recent geographical analyses of physicians[4] or the *Supply, Distribution and Migration of Canadian Physicians* series of publications produced by CIHI. For example, it deals little with the number of physicians who leave and return to the country, which is included in the latest analyses of the SMDB.[10] It does, however, deal much more explicitly with interprovincial, intraprovincial and rural–urban movements of Canada's physician workforce.

Background

On World Health Day in April 2006, the World Health Organization released its annual report and stated that "at the heart of each and every health system, the workforce is central to advancing health."[11] In Canada, the need to pay special attention to health human resources (HHR) issues had already been recognized through numerous commissions and task forces, such as the Commission on the Future of Health Care in Canada (which published the Romanow Report[12]) and the Standing Committee on Social Affairs, Science and Technology (which published the Kirby Report[13]). As well, the Health Council of Canada was established to monitor and report on the implementation of the 2003 First Ministers' Accord on Health Care Renewal. The accord recognized that "appropriate planning and management of health human resources is key to ensuring that Canadians have access to the health providers they need."[14]

ii. "Interprovincial" and "intraprovincial" are used in this report as generic terms and include provincial as wel as territorial movements. "Interprovincial migrants" refers to migrants who have moved from one province or territory to another. "Intraprovincial migrants" refers to those who have moved within the same province or territory.

Simply put, the goal of HHR planning is "having the right people with the right skills in the right place at the right time to provide the right services to the right people."[15]

Unfortunately, there is no single database in Canada that can be used to address all of these points. For many of the health professions included in the present *Distribution and Internal Migration* series, there is very little information about the relative counts of each profession and basic age and sex demographic information. This relatively simple supply-based information is critical for HHR planning and management of the health system. This fundamental supply-based information is provided within the majority of reports in this series in order to establish a starting point of basic information for all health professions within this series. However, for the present publication on Canada's physicians, those basic supply characteristics are not emphasized as these are featured in the CIHI *Supply, Distribution and Migration of Canadian Physicians* publications.

Geographical Distribution

The primary interest in geographical distribution for HHR planning is in the spatial distribution of health care providers relative to the distribution of the general population. It is the mismatch between the spatial distribution of the general Canadian public and that of health personnel that captures the attention of the public, mass media, policy-makers, health care administrators and researchers.[16] It is this mismatch, in Canada and elsewhere, that has generated a substantial literature dealing with "shortages"[17, 18, 19, 20, 21] and "imbalances"[22, 23] of human resources for health.

However, the geographical distribution of HHR in Canada is only moderately well understood. In *Health Personnel Trends in Canada, 1995–2004*,[24] CIHI described the various stages of evolution of its HHR information systems. At one end of the spectrum are the "mature supply-based information systems," which include the National Physician Database, Scott's Medical Database and the Registered Nurses Database. Based on these sources, the CIHI *Supply and Distribution* and *Work Force Trends* series of reports provide detailed information on the provincial and territorial distribution of physicians and registered nurses. Similar levels of detail are now emerging with the Licensed Practical Nurses Database and the Registered Psychiatric Nurses Database. At the present time, other HHR databases within CIHI belong to the category of "immature supply-based information systems." For the other health professional groups included in this series, as well as other health care providers that are not included, our knowledge of their geographical distribution is rudimentary.

Publications based on CIHI databases and other administrative databases or surveys, such as the census, have generally not examined subprovincial/subterritorial distributions of HHR. Exceptions include the *Geographic Distribution of Physicians in Canada*[16] and its update, *Geographic Distribution of Physicians in Canada: Beyond How Many and Where*[4] as well as *Supply and Distribution of Registered Nurses in Rural and Small Town Canada, 2000*.[5] Other than these studies of physicians and nurses, there are limited national geographical studies with subprovincial/territorial analyses for any of the other health care providers in Canada. This current publication series is designed to address that omission, within the limitations of the data employed.

Migration

One of the questions included in a recent World Health Organization guide to the assessment of human resources for health (HRH) is, "To what extent does internal migration of staff create distributional imbalance of HRH?"[25] In a review of Canada's health care providers, a similar question was posed: "How many regulated and unregulated health care providers move each year and what is the impact of their migration on health care services?"[26]

Migration may be viewed as the dynamic component of geographical distribution as people move from source to destination regions. It is also a reflection of a major HHR planning issue, namely recruitment and retention, with recruitment implying an increase in mobility and retention implying a decrease in mobility. In- or out-migration can affect source and destination regions in many different ways. In the context of remote rural communities in the United Kingdom, for example, it has been argued that "health professionals, working and residing locally, make a valuable contribution to the social structure of remote communities, in addition to health care, social care and economic contributions."[27] Similar comments have been made in the context of the migration of rural nurses in Canada.[8]

There exists a substantial volume of articles and reports dealing with the importance or analysis of interprovincial and, to a lesser extent, intraprovincial migration of the general population in Canada. Examples of this work include the examination of specialized data sets based on tax files[28] as well as census data.[29, 30, 31, 32, 33] A summary of the internal migration of the general Canadian workforce, which excludes all health care providers, is provided in Appendix B. It includes a brief literature review, as well as original computations using some of the data and methods that this series of publications is based on.

Missing from this list of publications, and even in the bibliographies that these authors provide, are analyses of the migration patterns of Canada's HHR. Searches in both the academic and popular literature for references dealing with HHR migration will yield many citations. But in those results, "migration" tends to refer to immigration or emigration, that is, international migration; and "HHR" tends to focus on physicians or nurses, but rarely dentists, pharmacists, medical laboratory technologists, physiotherapists, etc.

In many information sources specific to Canada, the overall impression when dealing with HHR is that migration means "brain drain to the United States." While international migration is not an inconsequential issue, the volumes of internal HHR migrants are far larger, especially for some provinces, territories and regions of the country. But internal migration patterns are submerged within general migration studies of the Canadian population. That is not to say that there are no Canadian HHR migration studies. There are academic journal articles that deal with both physicians[34, 35, 36, iii] and nurses.[37, iv] For all other groups of health care personnel, internal migration (and even international migration) is considered important but so far has merited very little in-depth analysis.[38, 39, 40]

iii. CIHI has been publishing its *Supply, Distribution and Migration of Canadian Physicians* reports annually since 2000. They contain data on migration and on numbers of physicians by province and territory, specialty, age group, gender, place of and years since medical-school graduation, as well as physician-to-pulation ratios by province and territory and specialty.

iv. CIHI published the following reports on nurses in 2005: *Supply and Distribution of Registered Nurses in Canada*, *Workforce Trends of Registered Nurses*, *Workforce Trends of Registered Psychiatric Nurses* and *Workforce Trends of Licensed Practical Nurses*.

Essentially, almost all internal migration studies of HHR in Canada have been concerned with interprovincial movement. Studies that examine intraprovincial migration patterns or on focused themes such as rural–urban movements of health personnel are limited.

Perhaps it is the case that "migration is often the most difficult component of population change to accurately model and forecast."[41] But there is little opportunity for accurate modelling or forecasting of Canadian HHR migration at the present time because so little work has been done to date. This is partially due to data inadequacies. Several HHR models in Canada do include migration,[42, 43] but the mobility details are rarely made public. HHR modelling overall appears to be in some difficulty in Canada. In a recent general review of the country's modelling capacity, the authors concluded that "given the breadth of HHR research in universities, research institutes, professional associations, and other organizations across Canada and the fact that health human resources planning is a high priority, component activity of ministries of health in each jurisdiction of Canada's federal system, the number of robust HHR models identified and discussed in this report can be described as meagre."[44]

Our understanding of the patterns and significances of HHR movements will not advance unless we fully exploit the databases that are already available to us, and include in our analyses all groups of health care professionals, not just physicians and nurses. This project is designed to contribute to that understanding by using the Canadian Census of Population from Statistics Canada and, in particular for this present report, Scott's Medical Database for the physician workforce from CIHI.

Structure of the Report

The purpose of this study, overall, is to provide an empirical analysis of the distribution and internal migration of selected health care providers of Canada. With some modifications where appropriate, the introduction, Appendix A (Methodological Notes), Appendix B (A Brief Summary of Internal Migration in Canada) and Appendix D (National Occupational Classification Definitions) are common to all of the reports in this series. The main section of this report examines the geographical distribution and the internal migration patterns of Canada's physicians. The primary focus is on the movement of physicians within Canada. Where possible, the features for this health occupation are compared with the spatial and temporal patterns of the aggregate of all non-health occupations or the general population. As indicated in Appendix A, occupations and migration patterns identified through the census apply only to people 15 years of age and older. However, this series of publications deals primarily with health care providers who are 20 years of age or older.

With respect to the Census:

The Standard Occupational Classification 1991 and the National Occupational Classification—Statistics 2001 classify physicians under two codes and headings: D011 Specialists physicians and D012 General practitioners and family physicians. The NOC definitions of these two occupation groups are provided in Appendix D.

With respect to the SMDB (see also Appendix A):

Family medicine physicians include 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. Specialist physicians include certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec.

In this study, results are presented for all physicians, as well as separately for family medicine physicians and specialists (see Methodological Notes, Appendix A, for information concerning the SMDB enumeration of non-certified specialists).

The four analytical chapters that deal specifically with physician migration are outlined below. Note that no chapter is devoted solely to geographical distribution. Rather, spatial elements of Canada's physicians are included, where appropriate, in all of the migration chapters.

Internal Migration: An Overview

The first chapter of this report deals with physician migration in Canada. Counts and percentages are provided for the following:

- Identification of the target populations;
- Interprovincial migration;
- Intraprovincial migration; and
- Urban–rural migration.

In recent years, the Canadian Census of Population allows for the examination of one-year and five-year migration patterns. However, only five-year migration data were available for all of the health occupation groups in the *Distribution and Internal Migration* series of reports. The five-year migration periods, using census data, were 1986 to 1991, 1991 to 1996 and 1996 to 2001. SMDB data for these same five-year migration periods were used in this report for comparison purposes. In addition, one-year migration patterns were also computed using 18 pairs of "origin" and "destination" years of SMDB data, from 1986–1987, 1987–1988, etc. .., to 2003–2004.

When dealing with the topic of mobility, the Canadian Census of Population employs the following generic categories and subcategories:

Non-Movers:

a) lived at the **same address** (one or five years ago).

Movers:

a) Non-migrant: lived at a **different address** within the **same community** (one or five years ago);
b) Intraprovincial internal migrant: lived in a **different community** within the **same province or territory** (one or five years ago);
c) Interprovincial internal migrant: lived in a **different province** (one or five years ago); and
d) International migrant—lived **outside of Canada** (one or five years ago).

In this classification system, a "community" is equated with the Statistics Canada standard geographical unit referred to as a census subdivision or CSD (see Methodological Notes, Appendix A). Using the SMDB to examine the migration patterns of Canada's physician workforce, non-movers include the first two categories given above: *lived at the same address one or five years ago* and *lived at a different address within the same community one or five years ago*. All other categories are the same. In addition, this report provides analyses of urban–rural movements of physicians where "urban" is equated with census metropolitan areas (CMAs) and census agglomeration areas (CAs) and "rural" is equated with non-CMA/CA areas of the country. Detailed definitions of these geographical areas are provided in the methodological notes (Appendix A).

Determinants of Migration

In this study, querying the records of Scott's Medical Database was analogous to asking each physician the following three questions for each pair of origin and destination years:

- Did you migrate within Canada?
- Did you migrate from one province or territory to another?
- Did you move from one community to another within the same province/territory?

Yes/no answers to these questions could be used to categorize a physician as a non-migrant, overall migrant (that is, an interprovincial or intraprovincial migrant), interprovincial migrant or intraprovincial migrant for the various migration periods (that is, pairs of origin-destination years).

These binary responses were used as dependent variables in a series of multivariate logistic regression analyses. The independent variables included in these analyses were the physician descriptors: age, sex, language, specialty (family medicine physician or specialist), location of medical graduation (graduate of a Canadian medical school or an international medical graduate) and initial location (urban or rural). All of these descriptors were drawn from the SMDB record in the origin year for each of the physicians included in the analyses.

The objective of using logistic regression in this section of the report is to provide a number of descriptive models that may aid migration analyses. Separately, any one of the independent variables listed above may, for example, be very important with respect to interprovincial migration but less so with respect to intraprovincial movement. Or, because

the outcome of a multivariate logistic regression model is based on the interdependence of the independent variables that are included in an analysis, a parameter that may be suspected to have an influence may not have one at all because of the presence or absence of some other characteristic. In this report, the series of multivariate logistic regression models are employed so that the interdependence of the independent variables is accounted for.

The choice of whether to migrate or not involves many complex decisions, and the possible characteristics of potential migrants that impinge on those decisions are many. Administrative databases, such as the SMDB, provide a limited cluster of variables that might influence the decision-making process or distinguish between migrants and non-migrants. At this stage of the work in this study, the models that have been generated should be treated as exploratory.

Internal Migration Origins and Destinations

Migration flows identify source and destination areas of migrants. In this section of the report, the focus is on interprovincial flows. Principal provincial/territorial destinations are identified for interprovincial physician migrants from each provincial/territorial place of origin. In-, out- and net-migration counts or rates are given for each of the 18 one-year and 3 five-year migration periods included in the study.[v]

A historical analysis of physician-to-population ratios (number of physicians per 100,000 population) is included in this chapter. These ratios are provided for Canada, as a whole, and for each province and territory. National and provincial/territorial population counts were derived from the demographic data published by Statistics Canada (see Appendix A for details). Where appropriate, these ratios are provided for the Northwest Territories and Nunavut, separately, or these two territories combined.

In general population studies, demographic growth of a province or territory is made up of the following components: natural increase (births minus deaths), net interprovincial migration (in-migration minus out-migration) and net international migration (immigrants minus emigrants). The equivalents of these components of growth were computed in order to determine their impacts on provincial and territorial changes in physician-to-population ratios. These influences are examined for one-year migration periods from 1986–1987 to 2003–2004.

Migration Frequency

The final analytical chapter of this report briefly explores some of the ways that the SMDB might be used in examining various measures that may be associated with recruitment and retention, particularly the latter. As an administrative database, the SMDB cannot tell us about the multitude of push-pull factors (family, community and professional) that influence a physician's decision to move or to stay in a particular practice locale or environment.

v. Results of these analyses are excluded from the tables and figures if a province's or territory's in- or out-migration count is less than five physicians. This exclusion rule affects most one-year migration periods for P.E.I. and all one-year and five-year migration periods for the Yukon. See the Methodological Notes, Appendix A, Privacy and Confidentiality, and the treatment of small cell sizes.

On the other hand, the SMDB can provide information about the following often related tems:

- How often do physicians move within Canada?
- How soon does internal migration occur after a physician has set up practice in a particular locale?
- How long do physicians practice in the same geographical location?

As there are numerous possible combinations and permutations of this type of analysis that one could undertake using the SMDB, only a limited number of examples are provided. Interprovincial migration is used to illustrate the first two items, and years spent in rural Canada are the focus of the analysis of length of practice.

Internal Migration: An Overview

Target Populations

Scott's Medical Database (SMDB) has been used by federal, provincial and territorial governments, medical stakeholder groups, various private organizations, researchers and others as a source of data on the supply, distribution and migration of physicians since the 1970s. It is the longevity of the data series that makes it particularly useful for the present study, which focuses on the internal mobility of Canada's physician workforce during the period from 1986 to 2004. Various subsets of the records in the SMDB have been used. Their general characteristics, and changes over the 19-year study period, are described below.

Information pertaining to data contained within the Census of Population from Statistics Canada may be found in Appendix A.

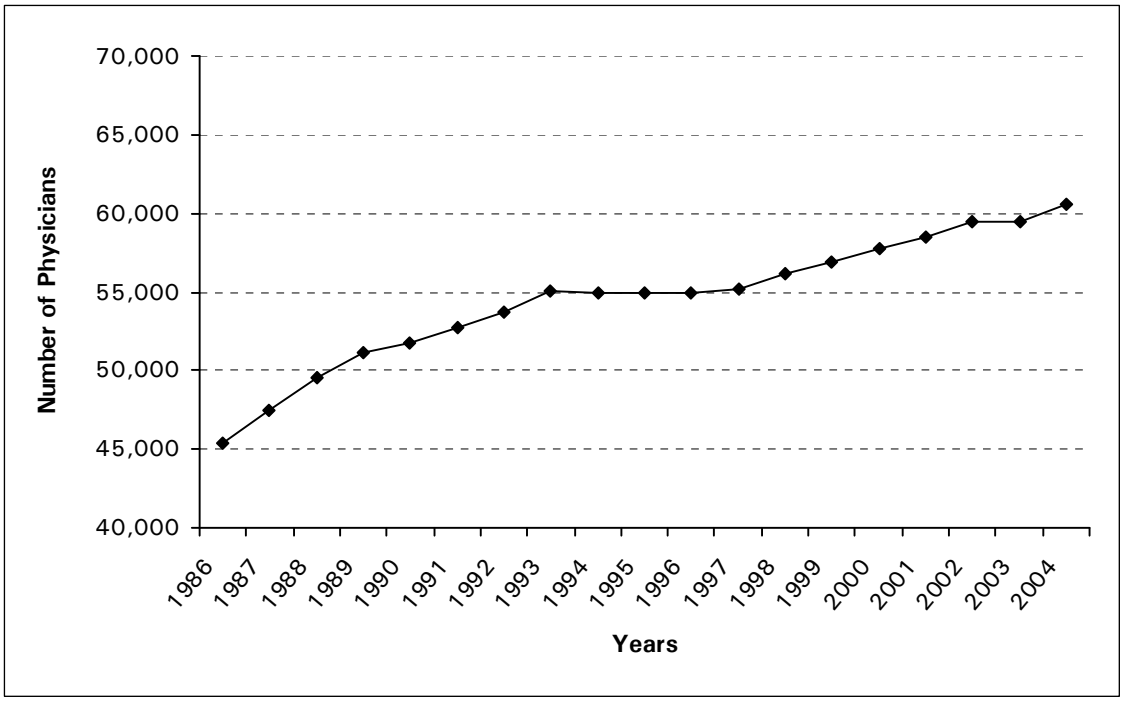
Active Physicians

In the SMDB, physicians are defined as "active" if they have a medical doctorate (MD) 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. Physician records were excluded from the analyses using the CIHI "no publication" status methodology (see Methodological Notes, Appendix A).

The total number of active physicians in Canada in each year of the 19-year study period is shown in Figure 1. From 1986 to 2004, the number of physicians increased from 45,413 to 60,612, an increase of approximately 33%. But, as seen from the levelling off of the line in that graph, the increase was not steady throughout this time frame. Rather, there was a 21% increase from 1986 to 1993 and then very little growth for five years, when the 1993-to-1997 increase was less than 1%. In fact, there was a decrease in the number of physicians from 55,029 in 1993 to 54,937 in 1994 and an additional decrease from 1995 to 1996, from 54,940 to 54,918. After 1997, the number of physicians increased again, but at a slower rate, at just under 10% from 1997 to 2004.

In comparison with physicians, the total population of Canada increased by 22% from 1986 to 2004. During the periods of change described above for physicians, changes in the growth of the Canadian population were as follows: 1986 to 1993—10%, 1993 to 1997—4% and 1997 to 2004—7%. The associations between the numbers of physicians and the general population are examined throughout this report, especially in terms of how migration impacts on physician-to-population ratios.

Figure 1. Total Number of Active Physicians, Canada, 1986 to 2004



Note: Value axis does not start at zero.

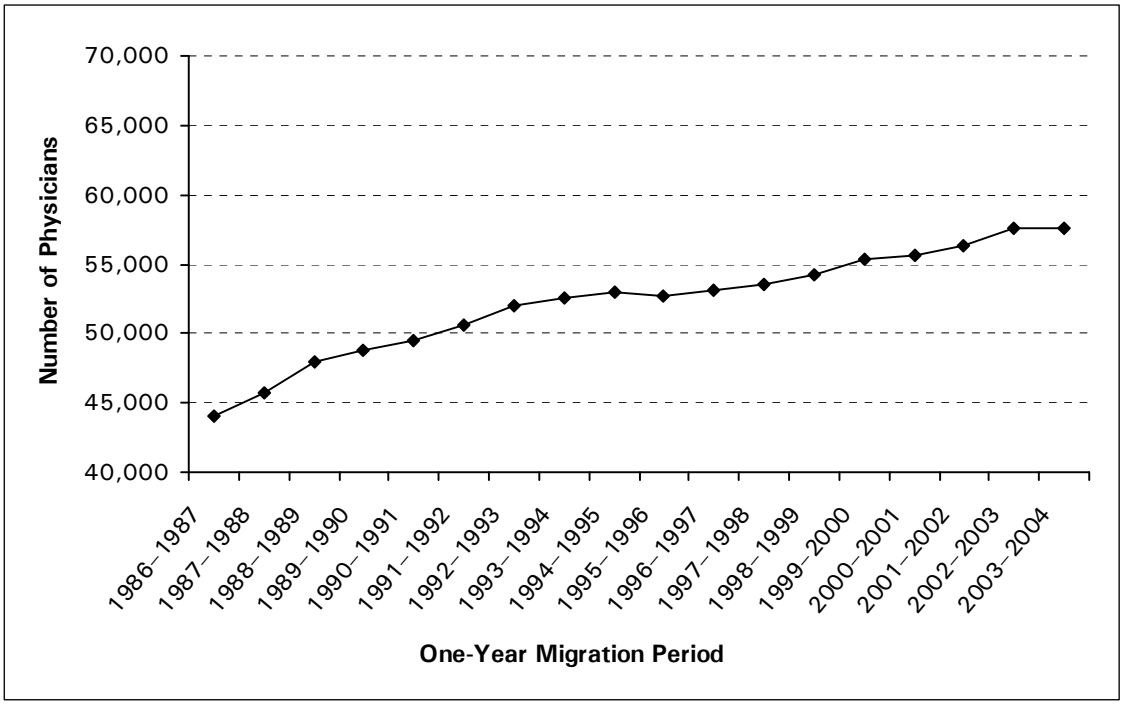
Source: SMDB, CIHI.

Potential Internal Migrants

To qualify as an internal migrant in this study, a physician had to be active (as defined above) in both origin and destination years. Two types of migration periods are used in the analysis: selected five-year and one-year periods. Thus, the numbers of physicians who were potential candidates for internal migration in the five-year migration periods were as follows: 1986 to 1991—39,582; 1991 to 1996—45,383; and 1996 to 2001—48,341.

The numbers of physicians active in both origin and destination years for the one-year migration periods are illustrated in Figure 2. These numbers range from a total of 43,980 physicians in 1986–1987 to 57,625 in 2003–2004. The decreases in the growth rates described for Figure 1 are reflected in the decrease in the numbers of potential internal migrants in the mid-1990s (Figure 2). For this subset of the SMDB, the number of potential internal migrants decreased slightly from 52,972 in the 1994–1995 migration period to 52,653 in 1995–1996.

Figure 2. Total Number of Physicians Active in Both Years of One-Year Migration Periods, Canada, 1986–1987 to 2003–2004



Note: Value axis does not start at zero.

Source: SMDB, CIHI.

As indicated in the introduction, a number of migration frequency patterns were examined based on various subsets of the SMDB records. These were drawn from the 85,627 physicians who were active in at least one of the study years from 1986 to 2004. For example, 25,105 physicians were active in all 19 of the study years. And, as another example, 1,561 physicians were not active in any of the years from 1986 to 1990, but were active in each of the years from 1991 to 2004. These various subsets were used to examine parameters such as length of practice in rural or urban locales, as well as frequency and timing of interprovincial[vi] and intraprovincial[vi] moves.

vi. "Interprovincial" and "intraprovincial" are used in this report as generic terms and include provincial and territorial movements. "Interprovincial" refers to migrants who have moved from one province or territory to another. "Intraprovincial" refers to those who have moved within the same province or territory.

SMDB Components of Growth

Employed with caution, physician-to-population ratios can provide useful information about the spatial and temporal variations in the relationships between the numbers of physicians and the numbers of people in the general population. In this study, various components of demographic growth are used to explore the impacts of migration on these ratios. Two of the components of growth employed in this study are identical to common demographic analyses: net interprovincial migration (the difference between in- and out-migration due to movements from one province or territory to another) and net international migration (the difference between in- and out-migration due to movements into or out of Canada).

The third component used in demographic growth studies is natural increase (the difference between births and deaths). In the present study, this parameter has been defined as the net loss or gain of physicians associated with factors other than interprovincial or international migration. Each year, many non-migrant physicians in Canada move into or out of active practice for any one of a number of reasons: new graduates just starting up practice, former military physicians setting up civilian practice or vice versa, beginning or ending of sabbaticals, semi-retirements or other forms of leaves, taking full retirement, death, etc. In the present analyses, these reasons were not enumerated. Rather, "natural increase" means simply "system" gains or losses.

The impacts of the components of growth of Canada's physician workforce have been generated for provinces and territories from 1986 to 2004 using the one-year migration periods identified earlier.

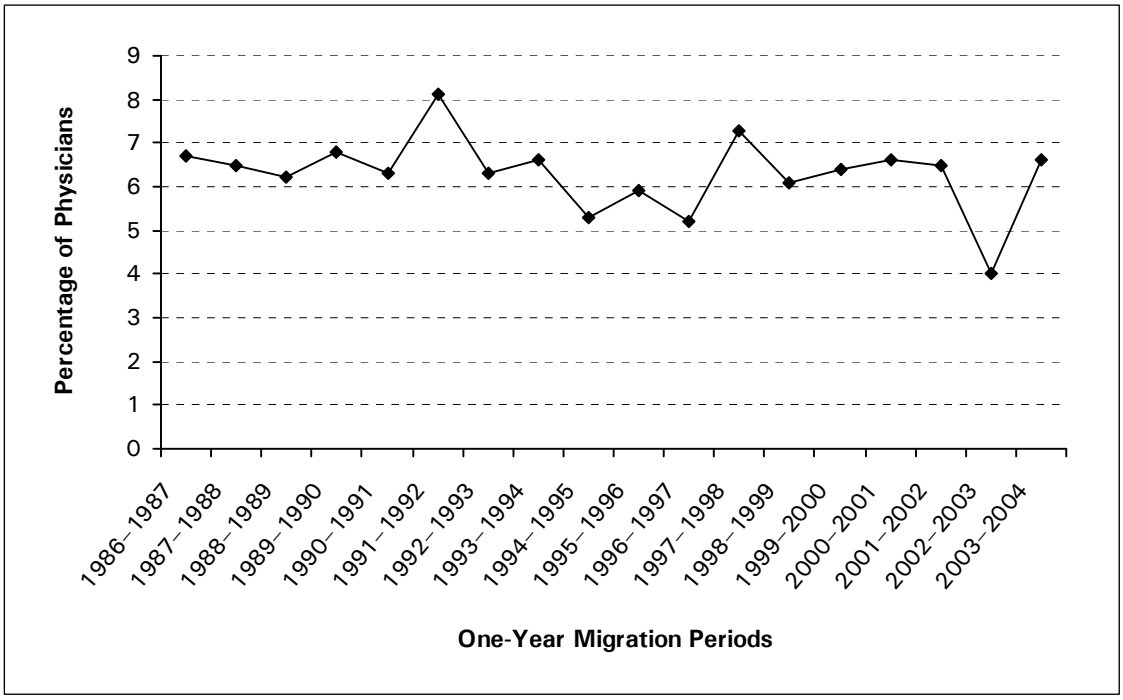
Overall Internal Migration

Of the 39,582 physicians who were active in both 1986 and 1991, 17% can be classified as internal migrants. They either moved from one community to another (as intraprovincial migrants) or from one province or territory to another (as interprovincial migrants). The proportions of physicians who were internal migrants increased to just under 19% in the 1991-to-1996 migration period and again to approximately 20% in 1996 to 2001.

The variation in the proportions of active physicians who were internal migrants for the one-year migration periods from 1986–1987 to 2003–2004 are shown in Figure 3. On average each year, approximately 6% of physicians can be classified as either intraprovincial or interprovincial migrants. Over this period of time, the highest rates were 8.1% in the 1991–1992 migration period and 7.3% in 1997–1998. The lowest proportion (4.0%) of physicians who were internal migrants occurred in the 2002–2003 migration period.[vii]

vii. Note that five-year migration proportions cannot be determined simply by adding up the one-year migration percentages for the same period. This would require computations that are known as "survival analysis." This has not been undertaken in this study.

Figure 3. Percentage of Physicians Active in Both Years of One-Year Migration Periods Who Were Internal Migrants, Canada, 1986–1987 to 2003–2004



Source: SMDB, CIHI.

Interprovincial Migration

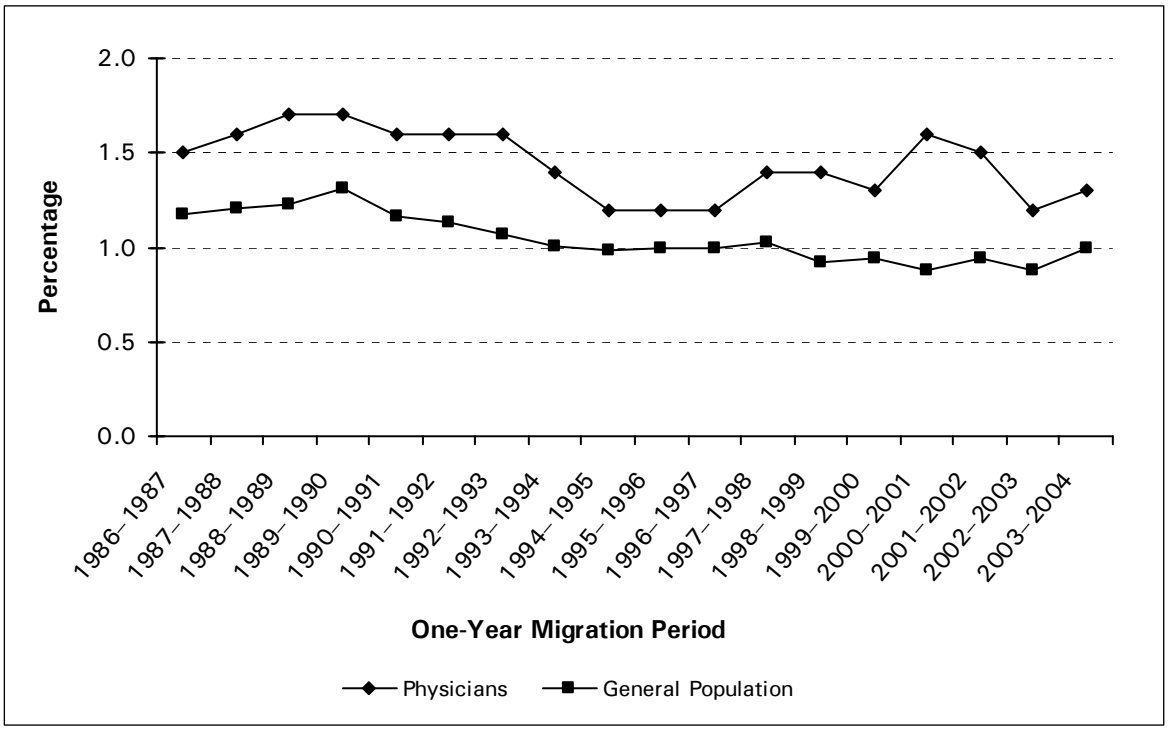
The proportions of active physicians who moved from one province or territory to another were very similar in each of the five-year migration periods included in this study. All were in the order of 4%: 4.1%—1986 to 1991; 4.0%—1991 to 1996; and 4.4%—1996 to 2001. These five-year migration proportions considerably mask the year-to-year variations in interprovincial migration of Canada's physician workforce.

It has been observed that, "Each year between 1% and 2% of active civilian physicians in Canada (excluding residents) migrate to another province or territory."[45] Figure 4 shows the annual variations over the period from 1986 to 2004. The average over these 18 one-year migration periods was 1.4%, ranging from 1.7% to 1.2%. Generally, as illustrated, interprovincial migration rates were relatively high during the 1980s, decreased during the 1990s, rose again in the early 2000s and decreased again in the 2002–2003 migration period.

Numerous reasons may account for the fluctuations in these interprovincial migration rates. Some of the demographic and professional characteristics of physicians that influence migration are examined in the following chapter.

Figure 4 also shows the percentages of the general population who were interprovincial migrants during this same period of time. That graph indicates the generally decreasing proportions of the general population who moved interprovincially. Using different data sources, a similar observation has been made.[29] Figure 4 indicates that, in terms of interprovincial movements, physicians have been more mobile than the general population over this period of time. The average over these 18 one-year migration periods was 1.1% for the general population compared with 1.4% for Canada's physicians. The gaps between these percentages decreased from about 1993–1994 to 1996–1997, but increased again in the late-1990s and early-2000s. It should be noted here that the data used in Figure 4 are based on a broader age range and level of educational attainment for the general population than for physicians. Both of these factors significantly influence mobility.

Figure 4. Percentage of Physicians Active in Both Years of a One-Year Migration Period Who Were Interprovincial Migrants and the General Population, Canada, 1986–1987 to 2003–2004



Sources: SMDB, CIHI; Annual Demographic Statistics, Statistics Canada.

Intraprovincial Migration

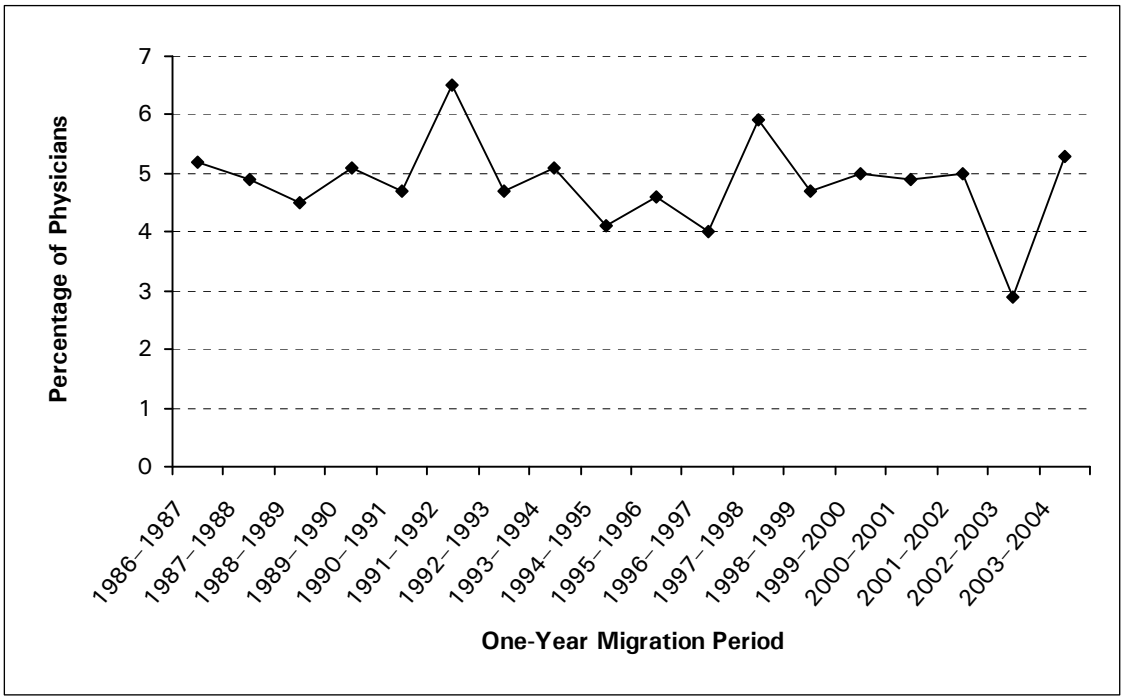
Provincial and territorial gains and losses of physicians are reflected in interprovincial migration rates. Equally important are the gains and losses experienced by communities. From a general perspective within provinces, the latter are reflected in intraprovincial movements.

The proportion of active physicians who moved from one community to another, within the same province or territory, increased over the selected five-year migration periods included in this study. In 1986 to 1991, 13.1% of physicians active in both years were intraprovincial migrants. The proportion increased to 14.5% in 1991 to 1996 and again to 15.1% during the 1996-to-2001 migration period.

Close to 5% of active physicians moved from one community to another each year from 1986 to 2004. Variations in the proportions of intraprovincial migrant physicians are illustrated in Figure 5. Peaks in these percentages occurred in 1991–1992 (6.5%) and in 1997–1998 (5.9%). The lowest proportion of intraprovincial migrants occurred in 2002–2003, when just 2.9% of active physicians moved from one community to another.

At the time of this analysis, one-year intraprovincial mobility percentages for the general population (equivalent to those shown for interprovincial movers in Figure 4) were not available for comparison purposes.

Figure 5. Percentage of Physicians Active in Both Years of a One-Year Migration Period Who Were Intraprovincial Migrants, Canada, 1986–1987 to 2003–2004



Source: SMDB, CIHI.

Urban–Rural Migration[viii]

Little information has been made available that examines the detailed movements of Canadians to and from urban or rural areas of the country.[46, 47] In addition, there is limited information at a national or provincial/territorial level for physicians. The gap in information for the general Canadian population (aged 15 years and over) has been filled, to some extent, by the recent work of Statistics Canada analysts.[30, 31] Using their methodology, similar analyses have been undertaken here for Canada's physician workforce.

For the selected five-year migration periods used in this study, Table 1 identifies the number of physicians who moved to and from large urban centres and rural and small-town areas of the country. Also indicated are the rural net-migration numbers and the rural and urban migration rates for these migration periods.

Over the period from 1986 to 1991, rural areas of Canada had a net loss of 366 active physicians. The net loss of rural physicians decreased in the 1991-to-1996 migration period, but increased again from 1996 to 2001. The rural net-migration rates were -9.4%, -4.1% and -8.3% for the 1986-to-1991, 1991-to-1996 and 1996-to-2001 migration periods, respectively. As shown in Table 1, the urban net-migration rates for these same five-year migration periods were opposite in sign (that is, urban areas of the country experienced net gains in numbers of physicians), but lower in magnitude because of the larger overall numbers of physicians practising in urban Canada.

By comparison, rural and small-town areas experienced minimal proportional losses of the general population from 1986 to 1991 and a positive net-migration rate of 1.4% in the 1991-to-1996 migration period (Table 2). Fluctuations from positive to negative rural net-migration rates appear to be more common for the general population than for physicians.

viii. In this section of the report, the terms "rural" and "rural and small town" as well as "urban" and "large urban centre" were used interchangeably.

Table 1. Migration Between Urban Areas and Rural Areas for Physicians Active in Both Years of Five-Year Migration Periods, Canada, 1986 to 1991, 1991 to 1996 and 1996 to 2001

Migration Counts and Rates	Census Migration Periods		
	1986 to 1991	1991 to 1996	1996 to 2001
Non-Movers (Counts)			
Rural	3,092	3,399	3,673
Urban	35,290	40,513	43,023
Internal Migrants (Counts)			
Rural to urban	783	821	1,017
Urban to Rural	417	650	628
Total net migration to rural areas	-366	-171	-389
	Migration Rates (Percent)		
Rural			
In-migration rate	10.8	15.4	13.4
Out-migration rate	20.2	19.5	21.7
Net-migration rate	-9.4	-4.1	-8.3
Urban			
In-migration rate	2.2	2.0	2.3
Out-migration rate	1.2	1.6	1.4
Net-migration rate	1.0	0.4	0.9

Notes:
Rural in-migration rate = (urban to rural)/(rural non-movers) + (rural to urban) * 100
Rural out-migration rate = (rural to urban)/(rural non-movers) + (rural to urban) * 100
Urban in-migration rate = (rural to urban)/(urban non-movers) + (urban to rural) * 100
Urban out-migration rate = (urban to rural)/(urban non-movers) + (urban to rural) * 100

Source: SMDB, CIHI.

Table 2. Migration Between Urban Areas and Rural Areas for the General Population (Aged 15 Years and Over) Present in Both Years of Five-Year Migration Periods, Canada, 1986 to 1991, 1991 to 1996 and 1996 to 2001

Migration Counts and Rates	Census Migration Periods		
	1986 to 1991	1991 to 1996	1996 to 2001
Non-Movers (Counts)			
Rural	4,663,105	4,907,775	4,839,030
Urban	16,492,170	17,715,775	19,058,385
Internal Migrants (Counts)			
Rural to Urban	554,515	469,990	545,435
Urban to rural	552,465	545,675	498,540
Total net migration to rural areas	-2,050	75,685	-46,895
	Migration Rates (Percent)		
Rural			
In-migration rate	10.6	10.1	9.3
Out-migration rate	10.6	8.7	10.1
Net-migration rate	-0.0	1.4	-0.9
Urban			
In-migration rate	3.3	2.6	2.8
Out-migration rate	3.3	3.0	2.5
Net-migration rate	0.0	-0.4	0.2

Notes:
Rural in-migration rate = (urban to rural)/(rural non-movers) + (rural to urban) * 100
Rural out-migration rate = (rural to urban)/(rural non-movers) + (rural to urban) * 100
Urban in-migration rate = (rural to urban)/(urban non-movers) + (urban to rural) * 100
Urban out-migration rate = (urban to rural)/(urban non-movers) + (urban to rural) * 100

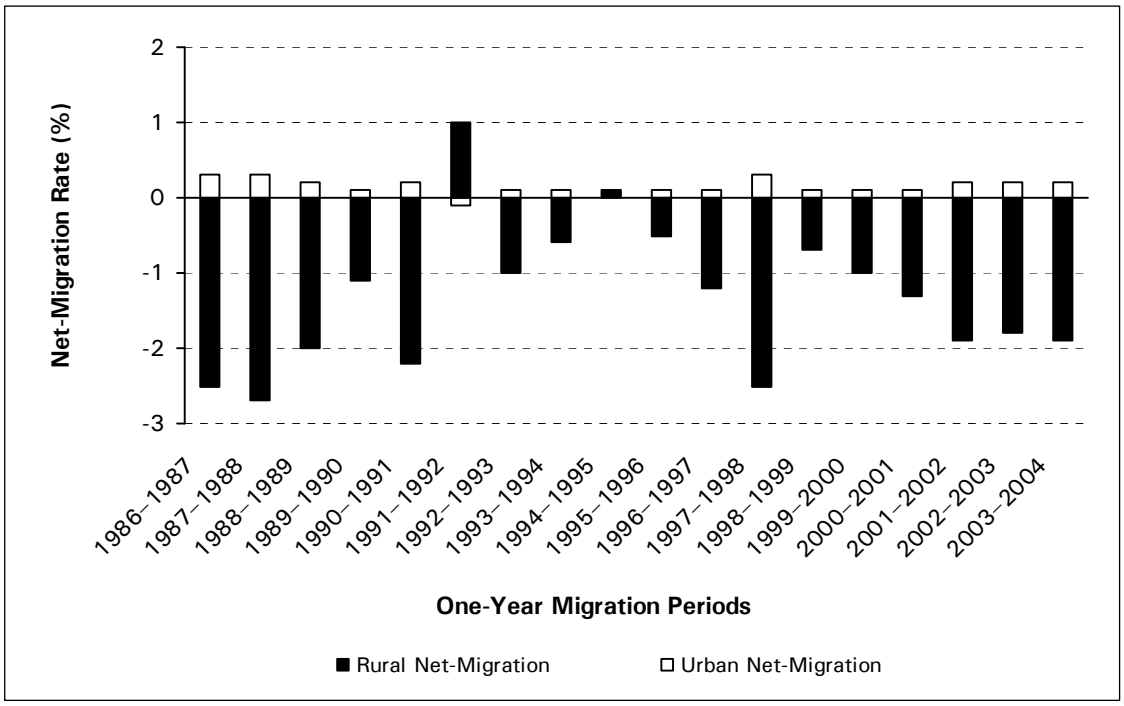
Source: Statistics Canada, Census of Population, 1991 to 2001.

Variations in the one-year net-migration rates of physicians for urban and rural areas of Canada are shown in Figure 6. Over the 19-year span from 1986 to 2004, the average rural net-migration rate has been -1.3% compared with the 0.1% average urban net-migration rate.

The largest proportional losses of physicians from rural Canada occurred in the 1987–1988 migration period, when the rural net-migration rate was -2.7%. Similar losses occurred in rural areas of the country in 1986–1987 (-2.5%) and again in 1997–1998 (-2.5%). In general, the net losses of physicians from rural areas of Canada were relatively high from 1986 to 1991 and decreased in the early 1990s, but increased again from 1995 to 1998. Rural net losses have also increased from 1998 to 2004. For urban areas of the country, the inverse of these trends would be observed.

Over this 19-year period, there were only two instances where more physicians moved into rural Canada than moved away. The largest positive rural net-migration rate (1%) occurred in the 1991–1992 migration period. From 1994 to 1995, rural and small-town Canada also experienced a positive net-migration rate, but this was relatively small (0.1%).

Figure 6. Net-Migration Rates for Urban and Rural Active Physicians for One-Year Migration Periods, Canada, 1986–1987



Source: SMDB, CIHI.

Determinants of Migration

The choice of whether to migrate or not involves many complex decisions, and the possible factors that impinge on those decisions are many. Administrative databases, such as the SMDB, provide a limited cluster of variables that may be used to identify factors which distinguish migrants from non-migrants. For this section of the report, a series of binary logistic regression analyses were undertaken to provide a number of descriptive models that may aid migration analyses of Canada's physician workforce. In association with the regression analyses, temporal and geographical descriptions of this workforce are provided using each of the variables introduced into the models. The objective is to determine what the SMDB can tell us about internal migration. No additional data are introduced.

Logistic Regression Analyses

In constructing the logistic regression models, three separate dependent variables were constructed for each of the three five-year migration periods (1986 to 1991, 1991 to 1996 and 1996 to 2001) and for each of the 18 one-year migration periods (1986–1987 to 2003–2004) that were included in this study. For the three dependent variables, yes/no (1/0) responses were coded by querying the records in Scott's Medical Database with questions analogous to asking each active physician the following:

- Did you migrate within Canada?
- Did you migrate from one province or territory to another?
- Did you move from one community to another within the same province/territory?

Listed below are the independent variables (that is, the possible determinants or factors that might influence the propensity to migrate) and, for the numerically inclined, the coding systems used in the regression models. Note that all of these independent variables were taken from the first year in the migration period (that is, the origin year). They are all in categorical form and, except for the age variable, the first category was used as the reference category in the analyses.

- **Age (years):** 0 = 20 to 29; 1 = 30 to 39; 2 = 40 to 49; 3 = 50 to 59; 4 = 60 and over; the 60-and-over age group was used as the reference category.
- **Sex:** 0 = male; 1 = female.
- **Language:** 0 = English; 1 = French.
- **Specialty (general grouping):** 0 = family medicine physician; 1 = specialist) (see SMDB methodology for definitions).
- **Place of (initial medical) graduation:** 0 = graduate of a Canadian medical school; 1 = graduate of a foreign medical school (that is, an international medical graduate or IMG).
- **Initial location (urban or rural):** 0 = (large urban centre or urban); 1 = (rural and small town).

The results of the logistic regression analyses for the five-year migration periods are provided in Table 3 (internal migration in general), Table 4 (interprovincial migration) and Table 5 (intraprovincial migration). For each of the three migration periods, these tables include the odds ratios (that is, the relative likelihood of migrating) for each of the independent variables, the 95% confidence intervals for those odds ratios and the statistical significance (p) for each of these odds ratios. The results for the one-year migration periods are discussed under the headings of each of the descriptor variables.

In general, for each descriptive category, if an odds ratio is greater than 1.0 and both the lower and upper confidence limits are also greater than 1.0, then the physicians in that category are more likely to migrate than the physicians in the reference category. Alternatively, if an odds ratio is less than 1.0 and both the lower and upper confidence limits are also less than 1.0, the physicians in that descriptive category are less likely to migrate than the physicians in the respective reference category. For any descriptive category, when the lower confidence limit is less than 1.0 and the upper limit is greater than 1.0, the difference in the likelihood of migration between the physicians in that category and those in the reference category is not considered to be statistically significant—that is, there is no significant difference.

Overall Internal Migration

The following notes provide some of the highlights of the logistic regression analyses (Table 3) when examining overall internal migration (interprovincial or intraprovincial).

- In all three five-year migration periods, younger physicians were more likely to migrate than older physicians. However, as discussed in a later section of this chapter, the average age of internal migrant physicians in Canada is increasing.
- Female physicians were more likely to migrate than male physicians in the 1986-to-1991 migration period, but not in 1991 to 1996 and 1996 to 2001.
- French-speaking physicians were 1.65 times more likely to migrate than English-speaking physicians in the 1986-to-1991 migration period. This greater likelihood of migrating continued for French-speaking physicians in the following two five-year migration periods, but with lower odds ratios.
- Specialist physicians were more likely to migrate than family medicine physicians in the 1986-to-1991 migration period, but there were no significant differences between these two general categories of physician specialties in the following two five-year migration periods.
- In all three five-year migration periods, the odds ratios presented in Table 3 suggest that physicians who graduated from a foreign medical school were more likely to migrate than those physicians who graduated from a Canadian medical school. However, when the migration proportions of IMG and non-IMG physicians are plotted against each other later in this chapter (Figure 24), there is a discrepancy. The apparent contradiction is examined when Figures 22 to 24 are discussed.
- Rural physicians were 1.89 times more likely to migrate than urban physicians in 1986 to 1991, and the likelihood that a rural physician migrated (compared to an urban physician) increased to 2.53 and again to 2.79 in 1991 to 1996 and 1996 to 2001, respectively.

Table 3. Selected Mobility Factors for Physicians Active in Both Years of Five-Year Migration Periods Who Were Internal Migrants, Canada, 1986 to 1991, 1991 to 1996 and 1996 to 2001

Characteristics at Beginning of Migration Period	Five-Year Migation Period								
	1986 to 1991			1991 to 1996			1996 to 2001		
	Odds Ratio	95% Confidence Intervals	p	Odds Ratio	95% Confidence Intervals	p	Odds Ratio	95% Confidence Intervals	p
Age Group									
20–29	6.32	5.50–7.26	0.000	5.92	5.24–6.68	0.000	6.46	5.64–7.39	0.000
30–39	2.58	2.30–2.88	0.000	2.04	1.85–2.25	0.000	2.49	2.27–2.73	0.000
40–49	1.22	1.09–1.38	0.001	0.90	0.81–0.99	0.000	1.15	1.05–1.26	0.003
50–59	0.92	0.81–1.05	0.210	0.75	0.67–0.84	0.034	0.89	0.81–0.99	0.023
60-and-over	1.00			1.00			1.00		
Sex									
Male	1.00			1.00			1.00		
Female	1.16	1.09–1.24	0.000	1.04	0.98–1.10	0.227	1.02	0.97–1.08	0.440
Language									
English	1.00			1.00			1.00		
French	1.65	1.55–1.76	0.000	1.35	1.28–1.43	0.000	1.42	1.35–1.50	0.000
Specialty									
GP/FP	1.00			1.00			1.00		
Specialist	1.20	1.13–1.27	0.000	0.95	0.90–1.01	0.082	1.02	0.97–1.07	0.426
Place of Graduation									
Canada	1.00			1.00			1.00		
Foreign	1.29	1.20–1.38	0.000	1.30	1.22–1.39	0.000	1.39	1.31–1.48	0.000
Rural?									
No	1.00			1.00			1.00		
Yes	1.89	1.74–2.05	0.000	2.53	2.35–2.73	0.000	2.79	2.60–2.99	0.000

Notes:
The first item (odds ratio = 1.00) of each physician characteristic, other than age, is the reference category.
The last item (odds ratio = 1.00) is the reference category for the age variable.
Odds ratio values are adjusted odds ratios based on multivariate logistic regression analyses.
GP/FP = General practitioner/family physician.

Source: SMDB, CIHI.

Interprovincial Migration

The following notes provide some of the highlights of the logistic regression results (Table 4) when examining interprovincial migration. In undertaking these analyses, intraprovincial migrants were excluded.

- In all three five-year migration periods, younger physicians were more likely to migrate from one province/territory to another than older physicians. However, as discussed in a later section of this chapter, the average age of interprovincial migrant physicians in Canada is increasing.
- There were no significant differences between male and female physicians in terms of the likelihood of interprovincial migration in any of these five-year migration periods.
- French-speaking physicians were less likely to migrate from one province or territory to another than English-speaking physicians in all three of the five-year migration periods.
- Specialist physicians were more likely to be interprovincial migrants than family medicine physicians, especially in the 1996-to-2001 migration period.
- In all three five-year migration periods, physicians who graduated from a foreign medical school (IMGs) were more likely to migrate from one province or territory to another than those physicians who graduated from a Canadian medical school. The odds ratios for IMGs increased from 1.54 in 1986 to 1991 to 2.19 in 1996 to 2001.
- Rural physicians were 1.94 times more likely to migrate from one province or territory to another than urban physicians in 1986 to 1991, and the likelihood that a rural physician migrated (compared to an urban physician) increased to 2.61, and 2.51, in 1991 to 1996, and 1996 to 2001, respectively.

Table 4. Selected Mobility Factors for Physicians Active in Both Years of Five-Year Migration Periods Who Were Interprovincial Migrants, Canada, 1986 to 1991, 1991 to 1996 and 1996 to 2001

Characteristics at Beginning of Migration Period	Five-Year Migation Period								
	1986 to 1991			1991 to 1996			1996 to 2001		
	Odds Ratio	95% Confidence Intervals	p	Odds Ratio	95% Confidence Intervals	p	Odds Ratio	95% Confidence Intervals	p
Age Group									
20–29	13.46	9.85–18.39	0.000	18.33	13.36–25.15	0.000	17.21	13.04–22.72	0.000
30–39	5.35	4.04–7.10	0.000	6.98	5.21–9.37	0.000	6.75	5.35–8.52	0.000
40–49	1.98	1.47–2.65	0.000	2.28	1.69–3.09	0.000	2.48	1.96–3.13	0.000
50–59	1.33	0.97–1.83	0.073	1.53	1.11–2.12	0.010	1.45	1.12–1.87	0.004
60-and-over	1.00			1.00			1.00		
Sex									
Male	1.00			1.00			1.00		
Female	1.04	0.92–1.18	0.512	0.93	0.83–1.04	0.196	0.98	0.89–1.08	0.675
Language									
English	1.00			1.00			1.00		
French	0.28	0.23–0.33	0.000	0.22	0.18–0.26	0.000	0.30	0.26–0.36	0.000
Specialty									
GP/FP	1.00			1.00			1.00		
Specialist	1.14	1.26–1.58	0.000	1.15	1.03–1.28	0.014	1.56	1.41–1.72	0.000
Place of Graduation									
Canada	1.00			1.00			1.00		
Foreign	1.54	1.36–1.73	0.000	1.84	1.63–2.07	0.000	2.19	1.97–2.44	0.000
Rural?									
No	1.00			1.00			1.00		
Yes	1.94	1.66–2.27	0.000	2.61	2.26–3.01	0.000	2.51	2.19–2.88	0.000

Notes:
The first item (odds ratio = 1.00) of each physician characteristic, other than age, is the reference category.
The last item (odds ratio = 1.00) is the reference category for the age variable.
Odds ratio values are adjusted odds ratios based on multivariate logistic regression analyses.
GP/FP = General practitioner/family physician.

Source: SMDB, CIHI.

Intraprovincial Migration

The following notes provide some of the highlights of the logistic regression results (Table 5) when examining intraprovincial migration. In undertaking these analyses, interprovincial migrants were excluded.

- In all three five-year migration periods, younger physicians were more likely to migrate from one community to another than older physicians. However, as discussed in a later section of this chapter, the average age of intraprovincial migrant physicians in Canada is increasing.
- Female physicians were slightly more likely to be intraprovincial migrants than male physicians in the 1986-to-1991 migration period, less so in 1991 to 1996; there was no significant difference 1996 to 2001.
- French-speaking physicians were 2.28 times more likely to move from one community to another (within the same province or territory) than English-speaking physicians in the 1986-to-1991 migration period. This greater likelihood of moving from one community to another continued for French-speaking physicians in the following two five-year migration periods, but with lower odds ratios.
- Specialist physicians were slightly more likely to move from one community to another than family medicine physicians in the 1986-to-1991 migration period. However, in the following two five-year migration periods, the reverse occurred. In those migration periods, specialist physicians were less likely to move from community to community than family medicine physicians.
- In all three five-year migration periods, the odds ratios presented in Table 5 suggest that physicians who graduated from a foreign medical school were more likely to be intraprovincial migrants than those physicians who graduated from a Canadian medical school.
- Rural physicians were 1.88 times more likely to move from one community to another (within the same province or territory) than urban physicians in 1986 to 1991, and the likelihood of a rural physician becoming an intraprovincial migrant (compared to an urban physician) increased to 2.50, and again to 2.83, in 1991 to 1996, and 1996 to 2001, respectively.

Table 5. Selected Mobility Factors for Physicians Active in Both Years of Five-Year Migration Periods Who Were Intraprovincial Migrants, Canada, 1986 to 1991, 1991 to 1996 and 1996 to 2001

Characteristics at Beginning of Migration Period	Five-Year Migation Period								
	1986 to 1991			1991 to 1996			1996 to 2001		
	Odds Ratio	95% Confidence Intervals	p	Odds Ratio	95% Confidence Intervals	p	Odds Ratio	95% Confidence Intervals	p
Age Group									
20–29	4.81	4.13–5.59	0.000	4.40	3.86–5.00	0.000	4.65	4.02–5.39	0.000
30–39	2.09	1.85–2.36	0.000	1.59	1.44–1.76	0.000	1.91	1.73–2.11	0.000
40–49	1.10	0.97–1.26	0.131	0.78	0.70–0.87	0.000	0.97	0.88–1.07	0.533
50–59	0.86	0.75–0.99	0.033	0.69	0.62–0.78	0.000	0.82	0.74–0.91	0.000
60-and-over	1.00			1.00			1.00		
Sex									
Male	1.00			1.00			1.00		
Female	1.20	1.11–1.29	0.000	1.07	1.00–1.14	0.038	1.04	0.98–1.10	0.172
Language									
English	1.00			1.00			1.00		
French	2.28	2.14–2.44	0.000	1.76	1.66–1.87	0.000	1.83	1.73–1.94	0.000
Specialty									
GP/FP	1.00			1.00			1.00		
Specialist	1.13	1.06–1.21	0.000	0.90	0.85–0.95	0.000	0.90	0.85–0.95	0.000
Place of Graduation									
Canada	1.00			1.00			1.00		
Foreign	1.23	1.13–1.33	0.000	1.20	1.12–1.29	0.000	1.22	1.14–1.31	0.000
Rural?									
No	1.00			1.00			1.00		
Yes	1.88	1.71–2.05	0.000	2.50	2.31–2.71	0.000	2.83	2.63–3.05	0.000

Notes:
The first item (odds ratio = 1.00) of each physician characteristic, other than age, is the reference category.
The last item (odds ratio = 1.00) is the reference category for the age variable.
Odds ratio values are adjusted odds ratios based on multivariate logistic regression analyses.
GP/FP = General practitioner/family physician.

Source: SMDB, CIHI.

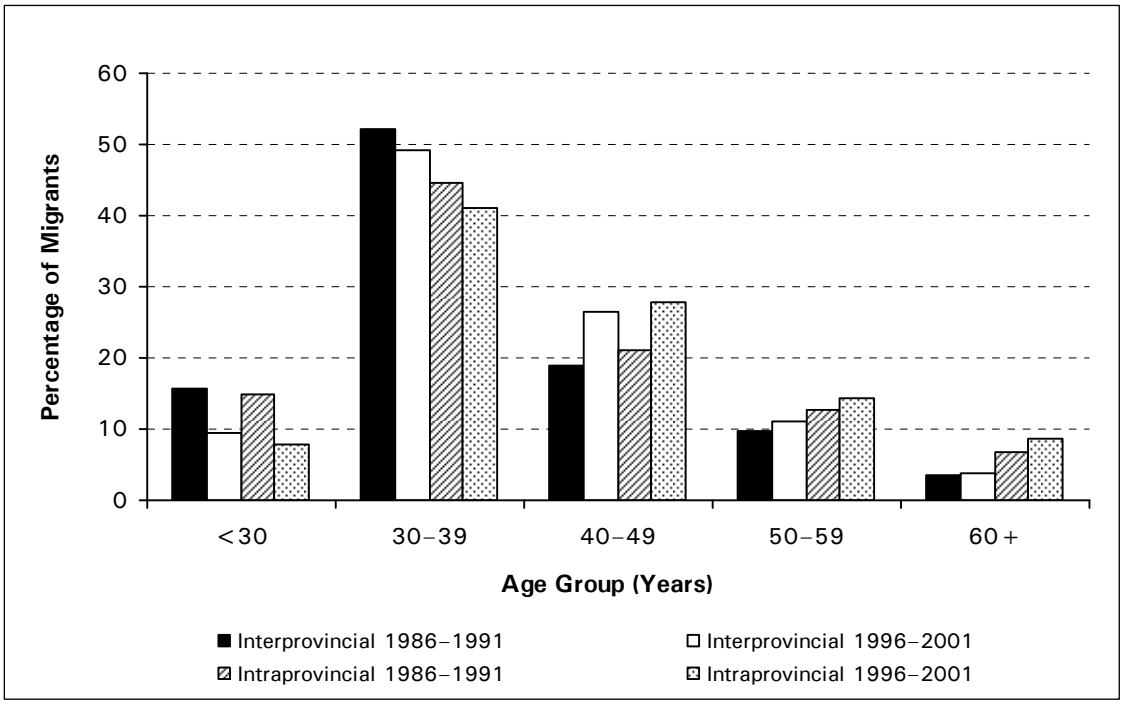
Age

In common with the general population and most occupational groups, the physician workforce in Canada is aging. In 1986, close to 6% of all physicians were less than 30 years of age, but by 2004 this proportion was less than 2% (Table C1, Appendix C). Decreases in the proportions of physicians in the 30-to-39 year age group have also been experienced over this 19-year period. In tandem with these changes in the younger age groups, each of the 40-to-49, 50-to-59 and 60-and-over age groups illustrated in Table C1 have experienced proportional increases from 1986 to 2004. Consequently, the average age of Canadian physicians has increased from 45.6 years in 1986 to 48.6 years in 2004. Similar increases in physician average ages have occurred in each province and territory (Table C2, Appendix C).

In spite of the fact that physicians less than 30 years of age are more likely to become internal migrants (as illustrated in Tables 3 to 5), there are fewer and fewer physicians in this age group. Consequently, the age distributions and average ages of internal migrants reflect this aging process.

To illustrate, Figure 7 provides the age distributions of interprovincial and intraprovincial migrant physicians for the five-year migration periods 1986 to 1991 and 1996 to 2001. In general, the proportions of physicians in the 30-and-under and the 30-to-39 year age groups who were internal migrants have decreased, while those in the older age groups have increased. Physicians who were interprovincial migrants in 1986 to 1991 were, on average, 38 years of age, but by 1996 to 2001 their average age was just over 39 years. Similarly, intraprovincial physician migrants were, on average, older in the second of these migration periods, just over 40 years of age in 1986 to 1991 and 42 years of age in 1996 to 2001.

Figure 7. Age Distribution at Beginning of Selected Five-Year Migration Periods for Active Physicians Who Were Interprovincial or Intraprovincial Migrants, Canada, 1986 to 1991 and 1996 to 2001



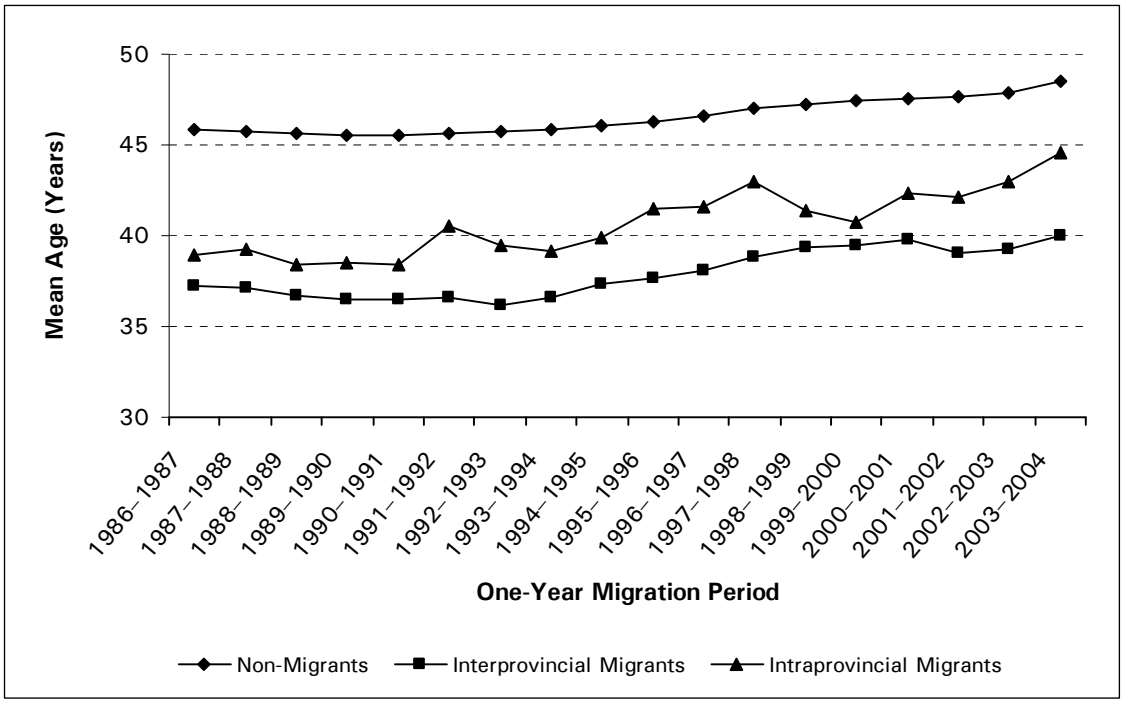
Source: SMDB, CIHI.

The aging of internal physician migrants, as well as non-migrants, is illustrated in Figure 8 for the 18 one-year migration periods from 1986–1987 to 2003–2004. This diagram plots the average ages of physicians who were non-migrants, interprovincial migrants or intraprovincial migrants over the period from 1986 to 2004. Additional active physician age distributions and average ages, for one-year and five-year migration periods, are provided in Appendix C, Table C3—non-migrants; Table C4—all internal migrants; Table C5—interprovincial migrants and Table C6—intraprovincial migrants.

Figure 8 reinforces the earlier observations, in this report and elsewhere, that interprovincial migrants are on average younger than intraprovincial migrants who, in turn, are younger than non-migrants. Equally important, the upward sloping lines in the diagram show that all of these groups of physicians in Canada are aging. In the 1986–1987 migration period, the average ages were 37.2 years, 39.0 years and 45.8 years for interprovincial migrants, intraprovincial migrants and non-migrants, respectively. By 2003–2004, the average ages for those groups of physicians were 40.0 years, 44.6 years and 48.5 years, respectively.

While it is true that younger physicians have a higher propensity to migrate internally than older physicians, older physicians in Canada are increasingly mobile. The older age profiles of the entire physician workforce are reflected in the aging profiles of both intraprovincial and interprovincial movers.

Figure 8. Average Age at Beginning of One-Year Migration Periods for Active Physicians Who Were Non-Migrants, Interprovincial Migrants or Intraprovincial Migrants, Canada, 1986–1987 to 2003–2004



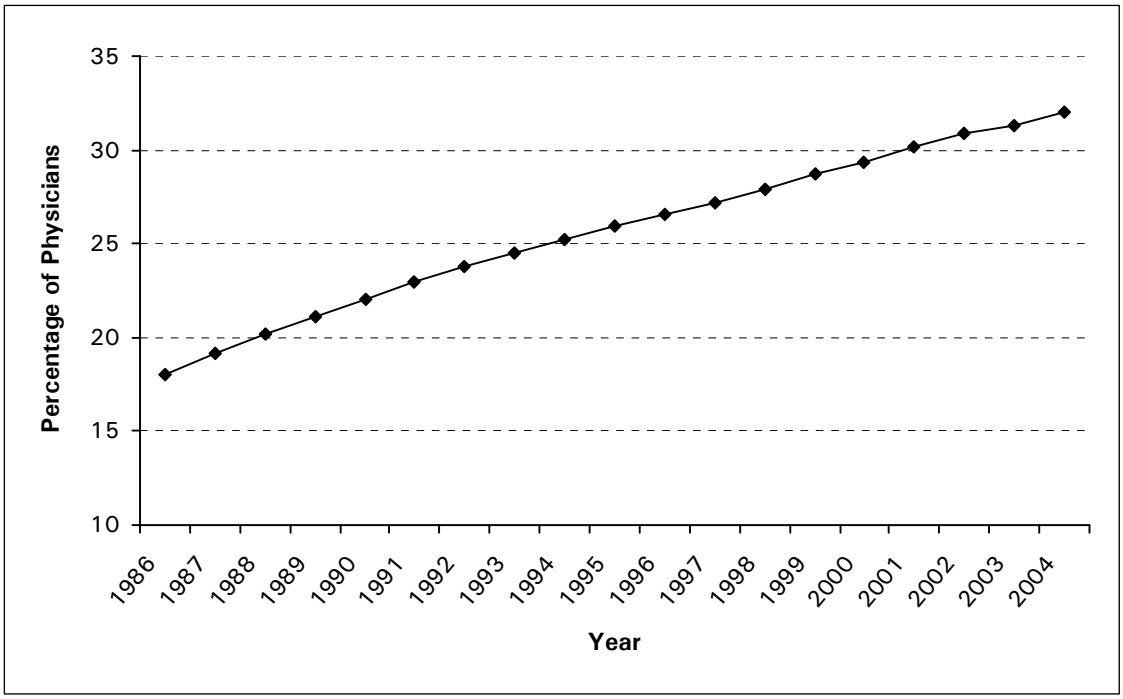
Note: Value axis does not start at zero.

Source: SMDB, CIHI.

Sex

In 1986, 18% of all physicians in Canada were female. Over the period from 1986 to 2004, the proportions of female physicians steadily increased (Figure 9). By 2004, 32% of all physicians in Canada were female. This represents an increase of 14 percentage points in the proportion of females in the physician workforce.

Figure 9. Percentage of Female Physicians Active in Canada, 1986 to 2004



Note: Value axis does not start at zero.

Source: SMDB, CIHI.

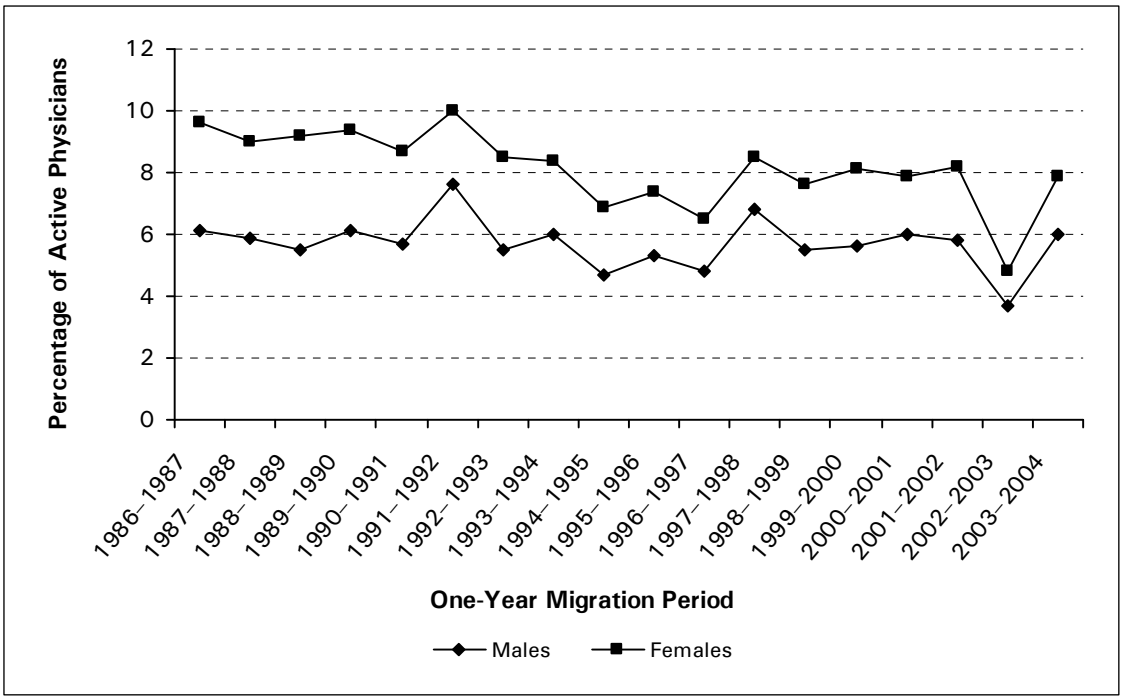
Given the increases in the overall numbers of physicians in Canada over this period of time (Figure 1) and the increases in the proportions of female physicians (Figure 9), one might speculate that the changing sex structure of this workforce could alter internal migration profiles. The results of the logistic regression analyses described earlier using five-year migration periods suggest that this is the case and that the migration profiles of male and female physicians are becoming more similar.

This observation is reinforced using results from the analyses of one-year migration periods from 1986–1987 to 2003–2004. Figure 10 provides a comparison, by sex, of the proportions of active physicians who were internal migrants in each of the one-year migration periods from 1986 to 2004. Figures 11 and 12 provide similar comparisons for interprovincial and intraprovincial migration, respectively. Table C7 in Appendix C provides the odds ratios and 95% confidence intervals generated from the logistic regression analyses for each of these three categories of internal migration.

The highlights of these illustrations include the following:

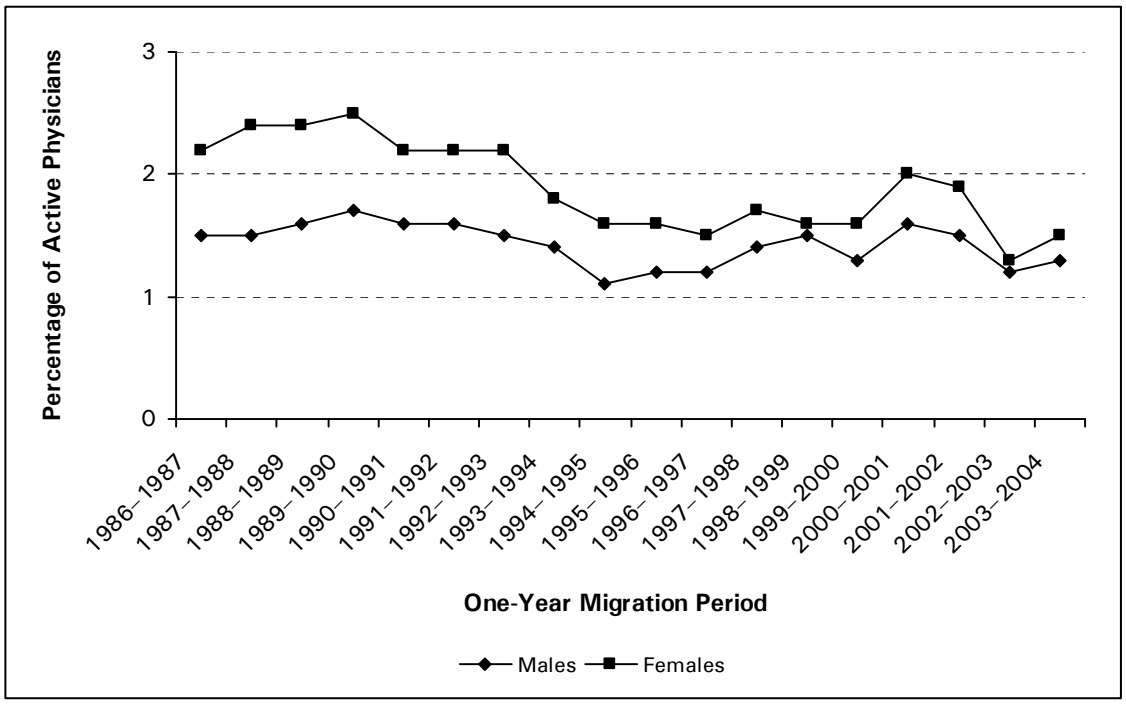
- Higher proportions of female physicians than male physicians have been internal migrants (Figure 10), interprovincial migrants (Figure 11) or intraprovincial migrants (Figure 12) in each of the one-year migration periods from 1986 to 2004.
- The proportions of female and male physician internal migrants move in tandem (that is, increases or decreases in the proportions of migrants occur at the same time for both female and male physicians).
- The differences in the proportions between female and male physician internal migrants have steadily become less and less.
- The converging of the female and male physician proportions of migrants is primarily associated with interprovincial movements (Figure 11).
- Most statistically significant differences between female and male physician proportions of migrants are associated with intraprovincial movements (Figure 12 and Table C7).

Figure 10. Percentage of Active Physicians by Sex, Who Were Internal Migrants During a One-Year Migration Period, Canada, 1986–1987 to 2003–2004



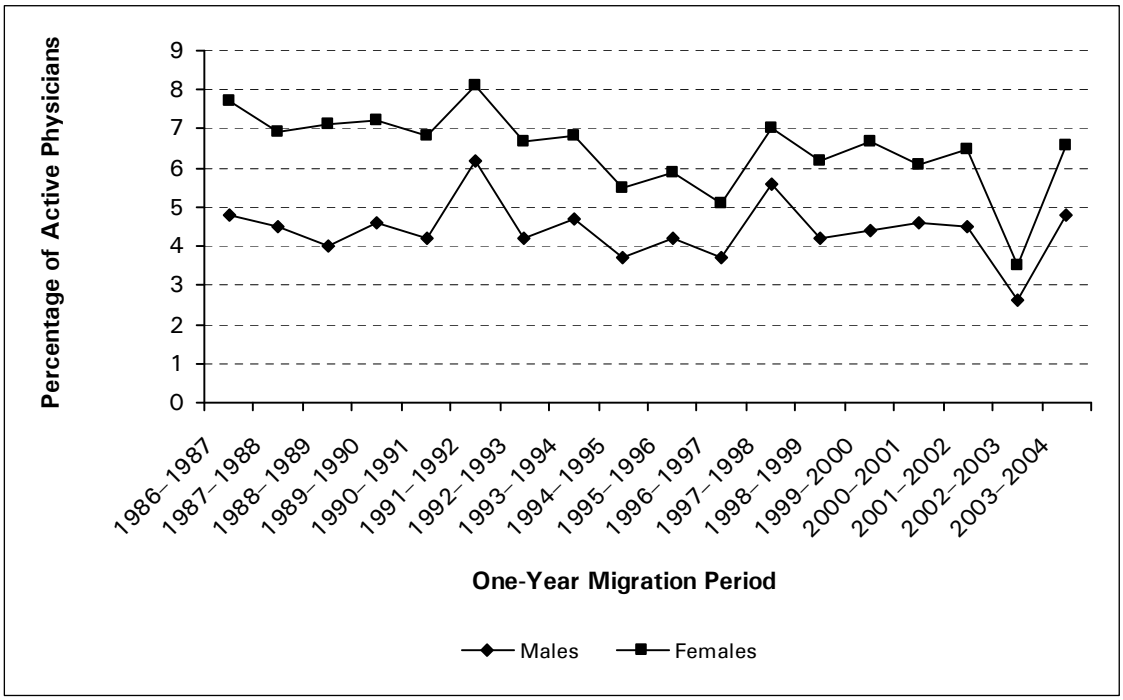
Source: SMDB, CIHI.

Figure 11. Percentage of Active Physicians by Sex, Who Were Interprovincial Migrants During a One-Year Migration Period, Canada, 1986–1987 to 2003–2004



Source: SMDB, CIHI.

Figure 12. Percentage of Active Physicians by Sex, Who Were Intraprovincial Migrants During a One-Year Migration Period, Canada, 1986–1987 to 2003–2004

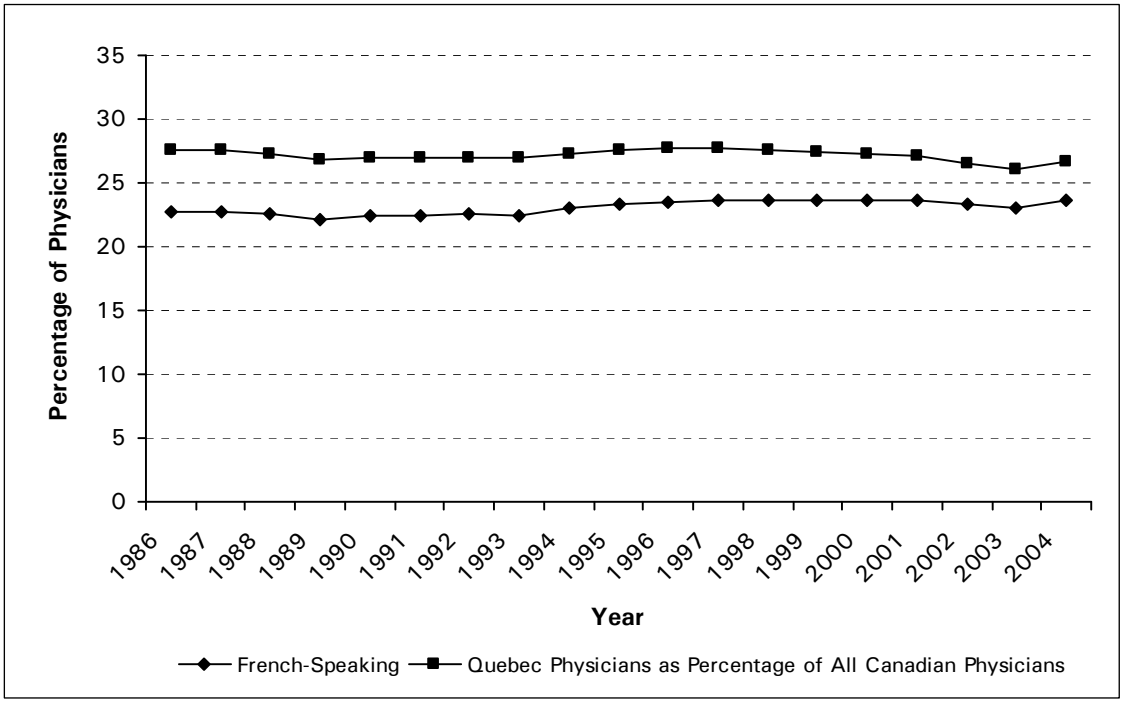


Source: SMDB, CIHI.

Language

The proportion of physicians who have requested that Scott's Directories communicate with them in French (here used as a proxy for French-speaking physicians), as opposed to English (here used as a proxy for English-speaking physicians), varied from a low of 22% in 1989 to a high of approximately 24% from 1997 to 2001 and again in 2004 (Figure 13). The proportions of French-speaking physicians are almost perfectly correlated with the variations in the numbers of physicians in Quebec shown in Figure 13 as proportions of all Canadian physicians.

Figure 13. Percentage of Active Physicians Who Were French-Speaking (See Cautionary Note Below), Canada, 1986 to 2004, and Quebec Physicians as a Proportion of All Canadian Physicians, 1986 to 2004



Note: "French-speaking" and "English-speaking" are taken from the SMDB variable "language." The latter refers to whether a physician wishes to receive information from Scott's Directories in English or French. Thus, this variable is only a proxy for whether a physician is French- or English-speaking.

Source: SMDB, CIHI.

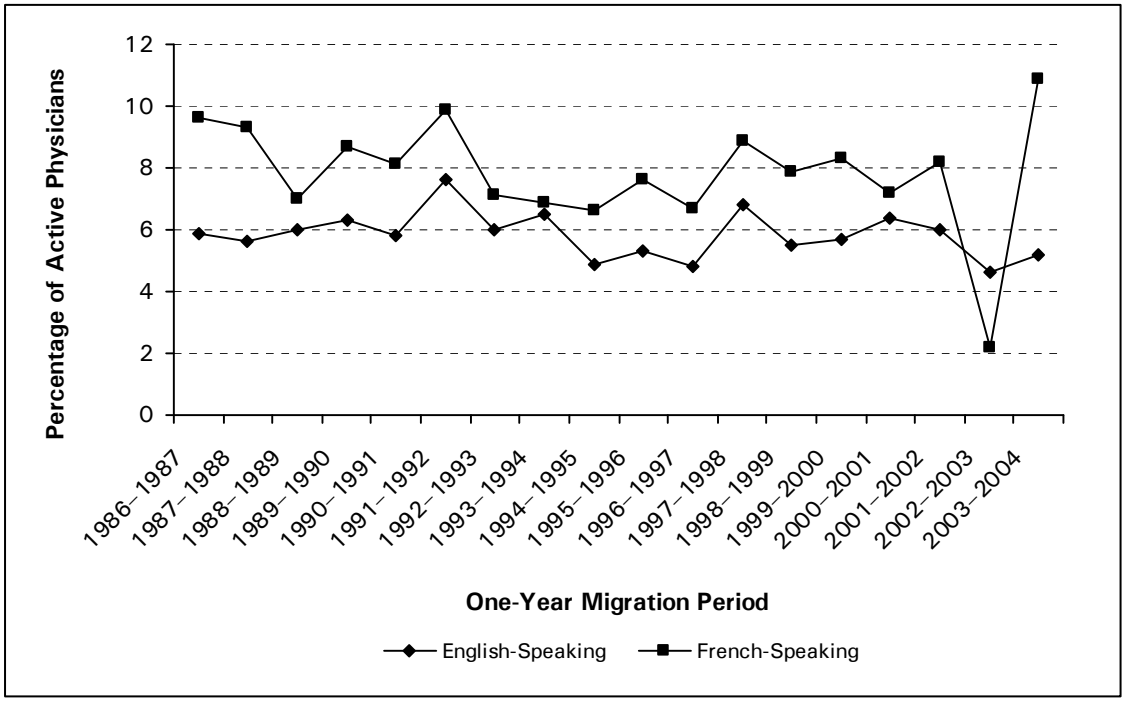
Language has been identified as a significant influence on the interprovincial migration of Canada's physicians.[35, 48] Results of the logistic regression analyses described earlier using five-year migration periods support those observations. French-speaking physicians in Canada are less likely to move from one province to another. On the other hand, this does not mean that there is no mobility among French-speaking physicians. In fact, the results of the logistic regression analyses for selected five-year migration periods indicate that French-speaking physicians have been from 1.8 (1991 to 1996 and 1996 to 2001) to 2.3 (1986 to 1991) times more likely to move from one community to another as intraprovincial migrants than English-speaking physicians.

These observations are reinforced using results from the analyses of one-year migration periods from 1986–1987 to 2003–2004. Figure 14 provides a comparison, by language, of the proportions of active physicians who were internal migrants in each of the one-year migration periods from 1986 to 2004. Figures 15 and 16 provide similar comparisons for interprovincial and intraprovincial migration, respectively. Table C8 in Appendix C provides the odds ratios and 95% confidence intervals generated from the binary logistic regression analyses for each of these three categories of internal migration.

The highlights of these illustrations include the following:

- Higher proportions of French-speaking physicians than English-speaking physicians have been internal migrants (Figure 14) in each of the one-year migration periods from 1986 to 2004, with the exception of the 2002–2003 migration period.
- However, these higher overall proportions for French-speaking physician migrants are accounted for by higher intraprovincial rates (Figure 16) compared with the proportions of interprovincial migrants (Figure 15).
- The proportions of French-speaking and English-speaking interprovincial physician migrants (Figure 15) move in tandem (that is, increases or decreases in the proportions of migrants occur at the same time for both groups of physicians).
- Similar observations may be made with respect to intraprovincial movements (Figure 16). However, there were a number of variations in these patterns over the period from 1986 to 2004. In particular, the proportion of French-speaking physicians who moved from community to community was lower than for English-speaking physicians in the 2002–2003 migration period, and this was followed by a relatively large increase in the proportions of intraprovincial French-speaking migrants in 2003–2004.
- All of the odds ratios for the language variable, computed for each of the 18 one-year migration periods in this study (Table C8), showed statistically significant differences between French-speaking and English-speaking physicians for both interprovincial and intraprovincial mobility patterns.

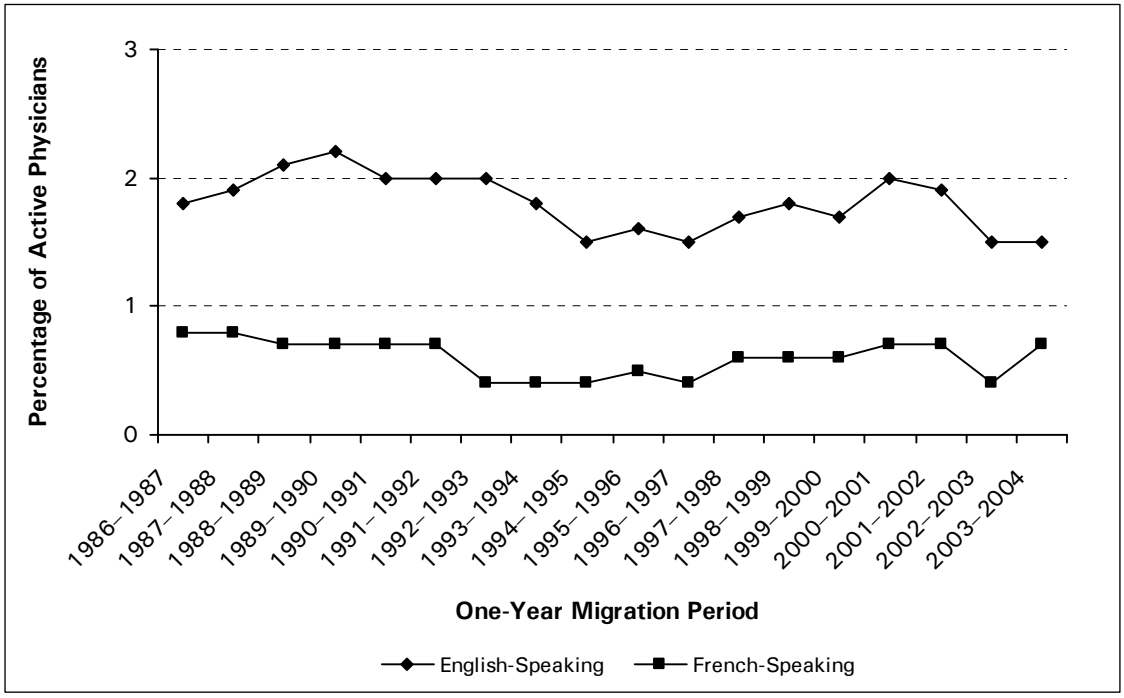
Figure 14. Percentage of Active Physicians by Language, Who Were Internal Migrants During One-Year Migration Periods, Canada, 1986–1987 to 2003–2004



Note: "French-speaking" and "English-speaking" are taken from the SMDB variable "language." The latter refers to whether a physician wishes to receive information from Scott's Directories in English or French. Thus, this variable is only a proxy for whether a physician is French- or English speaking.

Source: SMDB, CIHI.

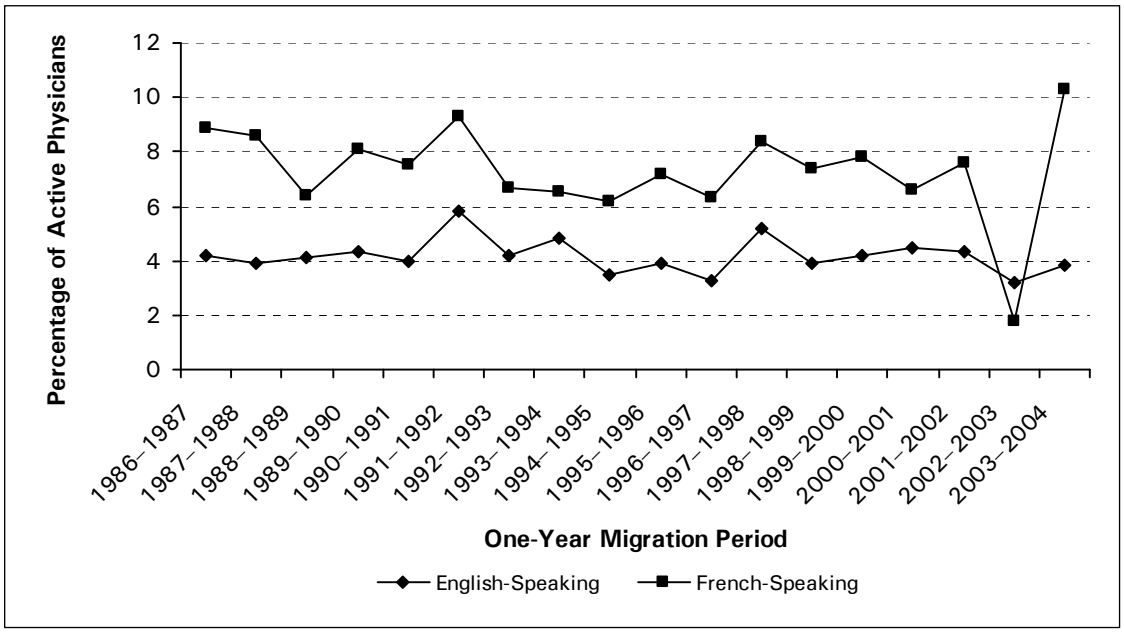
Figure 15. Percentage of Active Physicians by Language, Who Were Interprovincial Migrants During One-Year Migration Periods, Canada, 1986–1987 to 2003–2004



Note: "French-speaking" and "English-speaking" are taken from the SMDB variable "language." The latter refers to whether a physician wishes to receive information from Scott's Directories in English or French. Thus, this variable is only a proxy for whether a physician is French- or English speaking.

Source: SMDB, CIHI.

Figure 16. Percentage of Active Physicians by Language, Who Were Intraprovincial Migrants During One-Year Migration Periods, Canada, 1986–1987 to 2003–2004



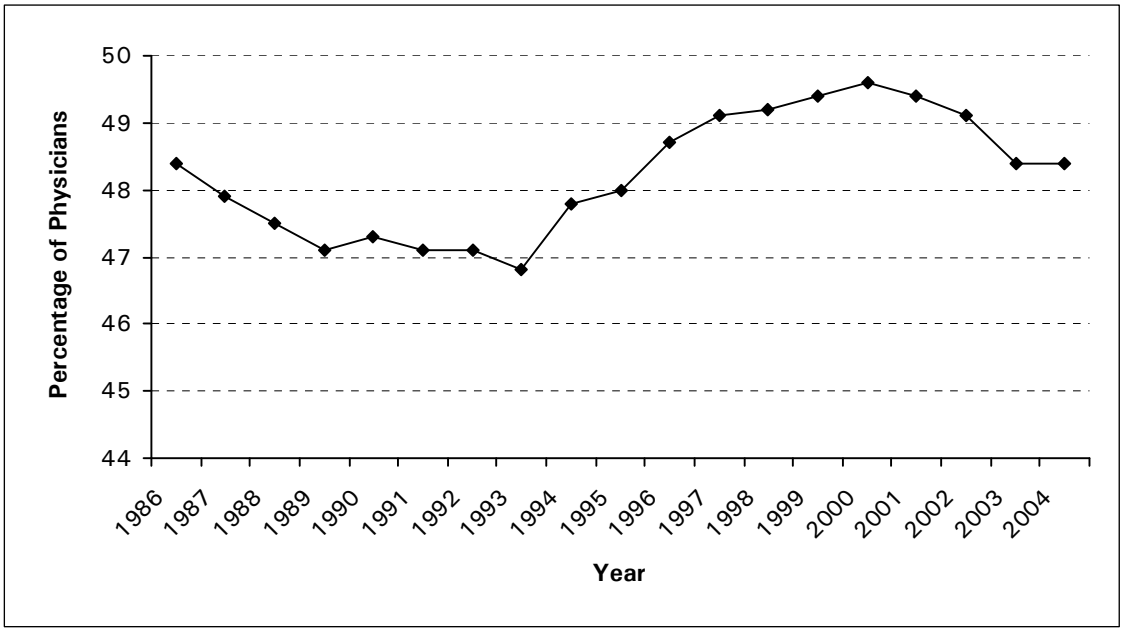
Note: "French-speaking" and "English-speaking" are taken from the SMDB variable "language." The latter refers to whether a physician wishes to receive information from Scott's Directories in English or French. Thus, this variable is only a proxy for whether a physician is French- or English speaking.

Source: SMDB, CIHI.

Physician Specialties

Over the period from 1986 to 2004 and in terms of the two broad categories of physicians (family medicine physicians and specialist physicians), the proportions of specialists have ranged from a low of 46.8% in 1993 to a high of 49.6% in 2000 (Figure 17). As indicated in that illustration, the proportions of specialists decreased from 48.4% in 1986 to 46.8% in 1993. After 1993, specialist proportions increased to 49% by 1997 and remained at that approximate level until 2003 and 2004, when the proportions of specialist physicians decreased to 48.4%.

Figure 17. Percentage of Active Physicians Who Were Specialists, Canada, 1986 to 2004



Note: Value axis does not start at zero.

Source: SMDB, CIHI.

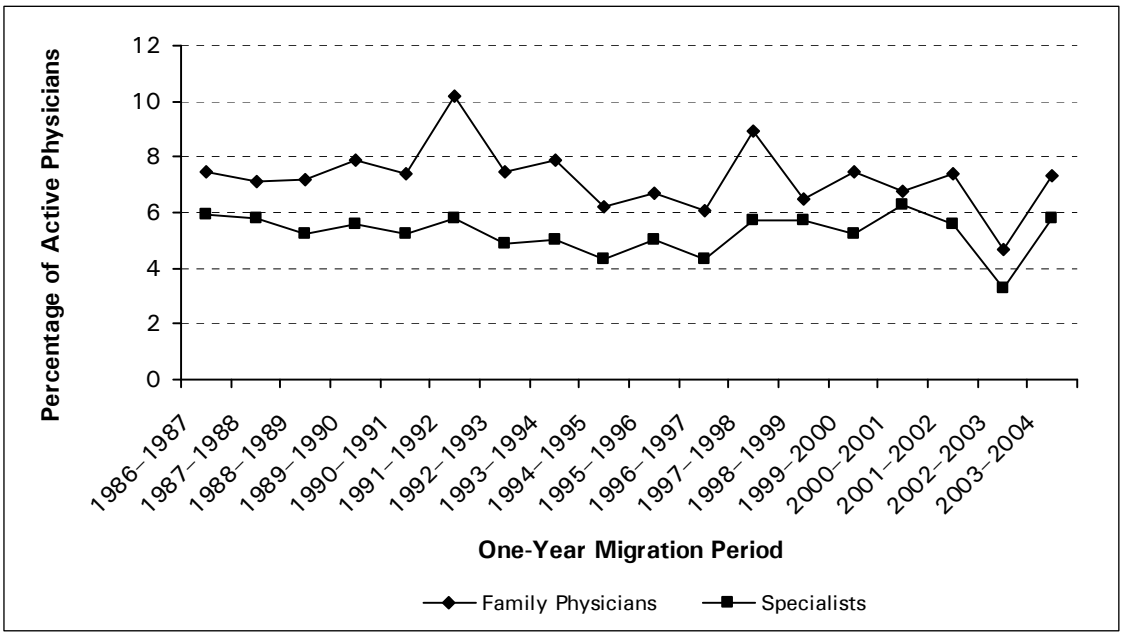
The results of the logistic regression analyses described earlier using five-year migration periods indicate that, at times, there have been differences in the internal migration profiles of family medicine physicians compared with specialists. At other times, however, there have been no differences in internal migration patterns between family medicine physicians and specialists. For example, specialist physicians were more likely than family medicine physicians to move from one province/territory to another, especially in 1996 to 2001 (Table 4). However, while specialist physicians were more likely to move from one community to another during the 1986 to 1991 migration period, it was family medicine physicians who were more likely to be intraprovincial movers in the following two five-year migration periods (Table 5).

Results from the analyses of one-year migration periods from 1986–1987 to 2003–2004 show more detailed similarities and differences for these two broad physician categories. Figure 18 provides a comparison, by specialty, of the proportions of active physicians who were internal migrants in each of the one-year migration periods from 1986 to 2004. Figures 19 and 20 provide similar comparisons for interprovincial and intraprovincial migration, respectively. Table C9 in Appendix C provides the odds ratios and 95% confidence intervals generated from the binary logistic regression analyses for each of these three categories of internal migration.

The highlights of these illustrations include the following:

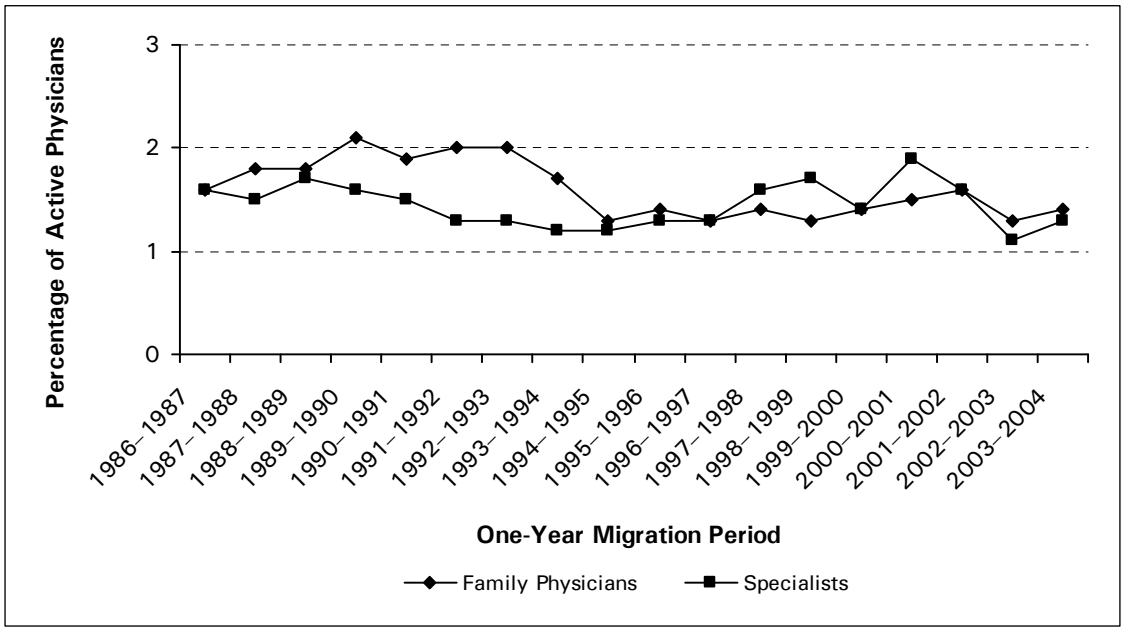
- Higher proportions of family medicine physicians than specialist physicians were internal migrants (Figure 18) in each of the one-year migration periods from 1986 to 2004.
- In terms of overall internal migration, the difference in the proportions of family medicine physicians and specialist physicians decreased (Figure 18).
- The reduction in the differences in these proportions was most noticeable in the interprovincial patterns (Figure 19) where, since the 1994–1995 migration period and unlike in most previous years, the proportions of specialists who were interprovincial migrants was often equal to or greater than the proportions for family medicine physicians.
- The proportion of family medicine physicians who were intraprovincial migrants exceeded the proportion for specialist physicians in all of the one-year migration periods from 1986 to 2004. But for this form of internal migration as well, the gap between the proportions generally decreased in more recent years.
- Most, but definitely not all, of the odds ratios for the variable physician specialty, computed for each of the 18 one-year migration periods in this study (Table C9), showed statistically significant differences between family medicine physicians and specialist physicians for both interprovincial and intraprovincial mobility patterns.

Figure 18. Percentage of Active Physicians, by Broad Specialty Category, Who Were Internal Migrants During a One-Year Migration Period, Canada, 1986–1987 to 2003–2004



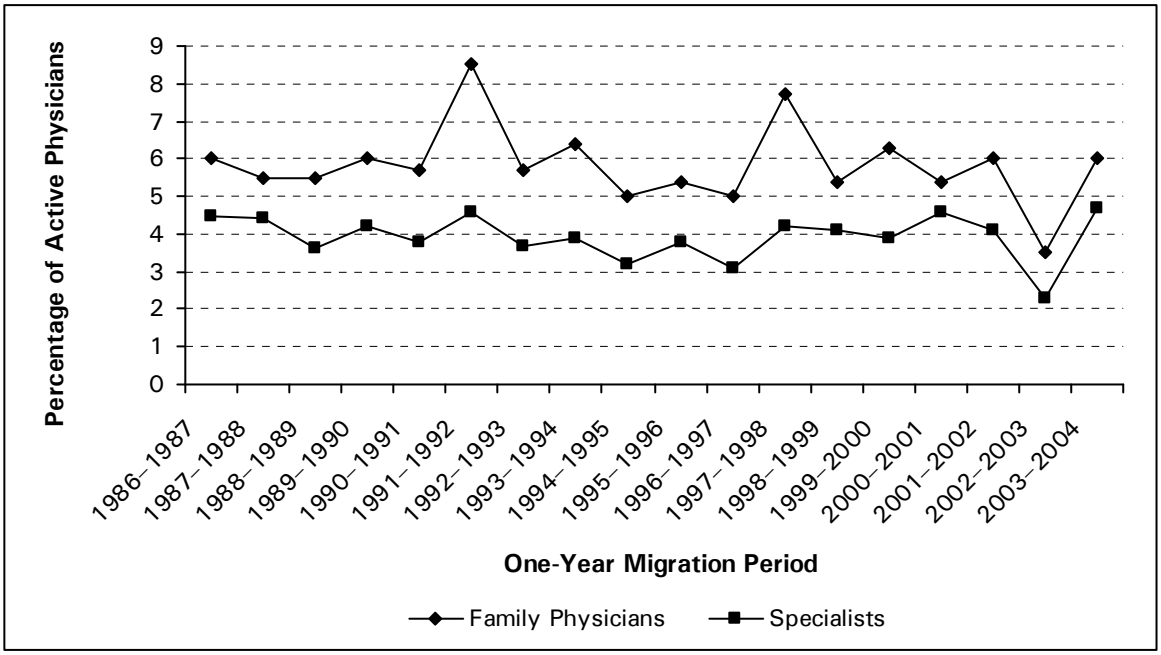
Source: SMDB, CIHI.

Figure 19. Percentage of Active Physicians, by Broad Specialty Category, Who Were Interprovincial Migrants During a One-Year Migration Period, Canada, 1986–1987 to 2003–2004



Source: SMDB, CIHI.

Figure 20. Percentage of Active Physicians, by Broad Specialty Category, Who Were Intraprovincial Migrants During a One-Year Migration Period, Canada, 1986–1987 to 2003–2004

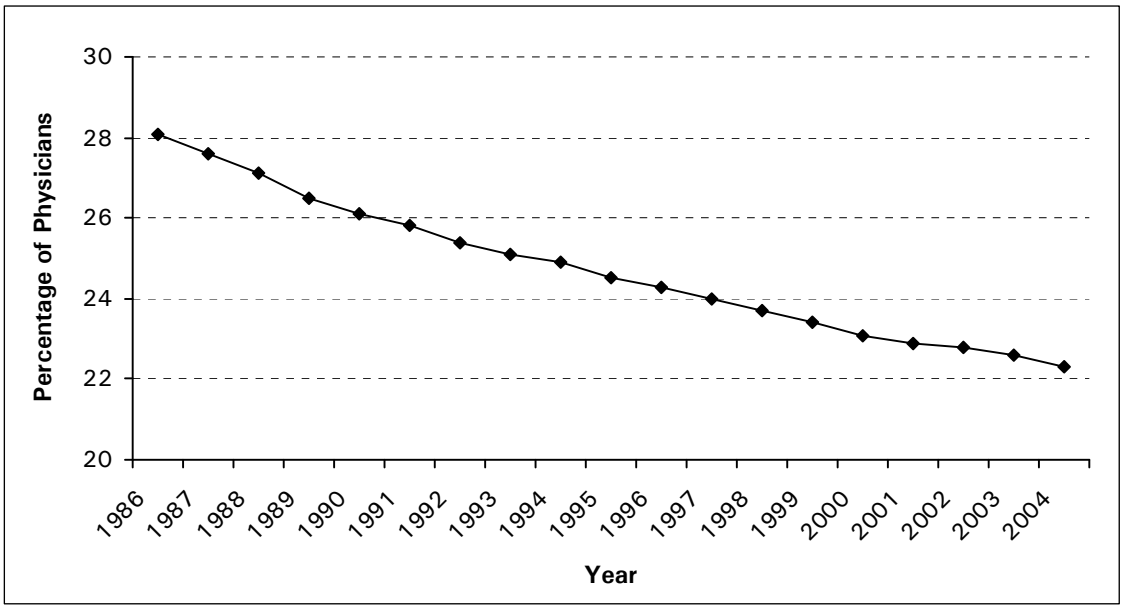


Source: SMDB, CIHI.

Location of Medical Graduation

Over the period from 1986 to 2004, there was a steady decrease in the proportions of the physician workforce in Canada who obtained their medical degree from a foreign medical school (Figure 21). In 1986, 28% of all physicians in Canada were international medical graduates (IMGs). By 2004, the proportion of active physicians who were IMGs had decreased to just over 22%.

Figure 21. Percentage of Active Physicians Who Were Graduates of Foreign Medical Schools, Canada, 1986 to 2004



Note: Value axis does not start at zero.

Source: SMDB, CIHI.

The results of the logistic regression analyses described earlier using five-year migration periods indicate that IMGs have a higher likelihood of being internal migrants than physicians who have graduated from a Canadian medical school. Diagrams showing the proportions of IMG and non-IMG migrant physicians by one-year migration periods highlight the complexity of these associations. Table C10 in Appendix C provides the odds ratios and 95% confidence intervals generated from the logistic regression analyses for each of these three categories of internal migration.

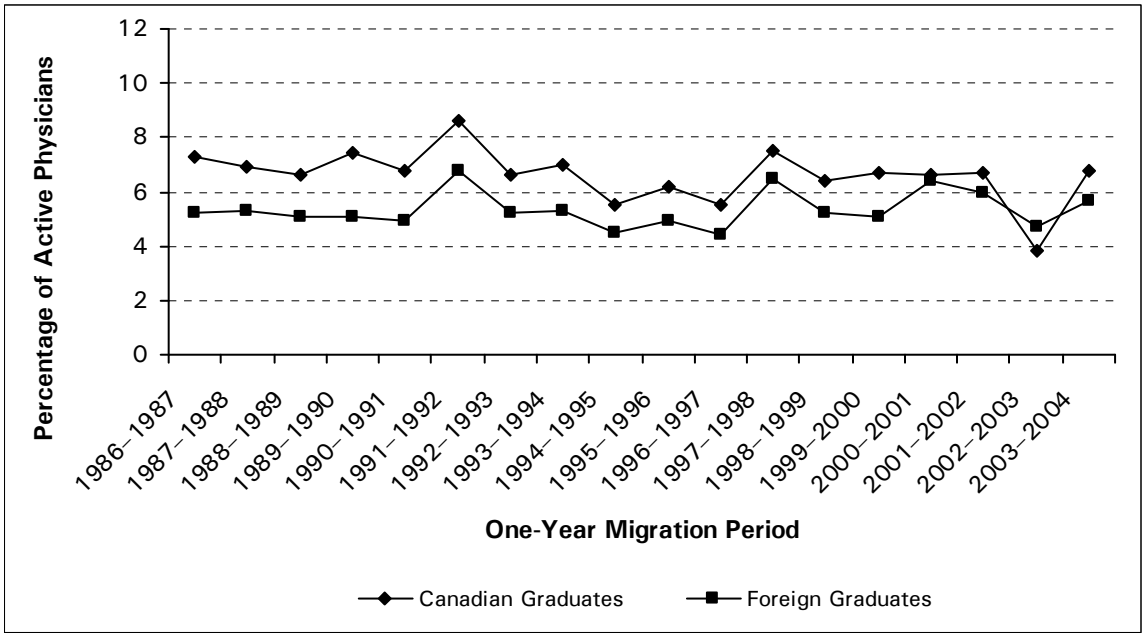
Recall that when examining interprovincial migration, IMGs were 1.54, 1.84 and 2.19 times more likely to migrate than physicians who had graduated from Canadian medical schools in the 1986-to-1991, 1991-to-1996 and 1996-to-2001 migration periods, respectively (Table 4). Over this span of years, the increasing likelihood that an IMG would move interprovincially is shown in Figure 23. From 1986 to 1997, the proportions of IMGs and graduates of Canadian medical schools who moved from a province/territory to another were very similar to each other, with non-IMG proportions sometimes greater than those for IMGs. However, from 1997 onward, the gap between these interprovincial proportions widened considerably, with much higher rates for graduates of foreign medical schools.

Results from the analyses of intraprovincial migration provide an interesting example of how the addition of independent or confounding variables in a multivariate logistic regression model may alter the statistical significance of a specific factor or, as in this case, the interpretation of its importance. Throughout the period from 1986 to 2004, the proportions of physicians who graduated from a Canadian medical school who moved from one community to another within the same province tended to be higher than those of IMGs (Figure 23). Yet the odds ratios described in Table 5 for the five-year migration periods (and for the one-year migration periods that are listed in Table C10) suggest that IMGs, rather than physicians who have graduated from Canadian medical schools, were more likely to move from one community to another.

The apparent discrepancy arises from the differences between unadjusted odds ratios and adjusted odds ratios computed by introducing the influences of the remaining variables in the multivariate logistic regression analyses. To illustrate, during the 1991-to-2001 migration period, the unadjusted odds ratio, produced by comparing intraprovincial migration with place of graduation only, was equal to 0.79 with lower and upper 95% confidence bounds of 0.88 and 0.98, respectively. That is, IMGs were less likely to move intraprovincially than physicians who graduated from a Canadian medical school. This is reflected in the proportions shown in Figure 24. As there were more intraprovincial movers than interprovincial, similar results are shown in Figure 22, which indicates that higher overall proportions of non-IMGs than IMGs were internal migrants.

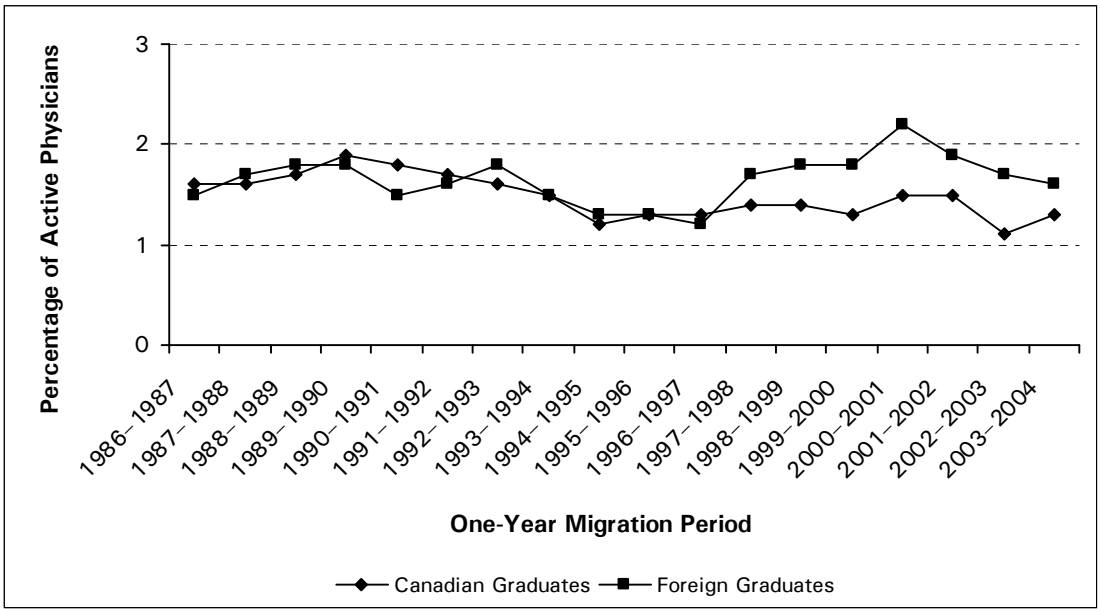
Place of graduation is not unimportant as a determinant of intraprovincial migration. However, that variable *per se* is associated with other physician characteristics, which have stronger influences on the likelihood of a physician moving from one community to another within the same province or territory.

Figure 22. Percentage of Active Physicians, by Place of Graduation, Who Were Internal Migrants During One-Year Migration Periods, Canada, 1986–1987 to 2003–2004



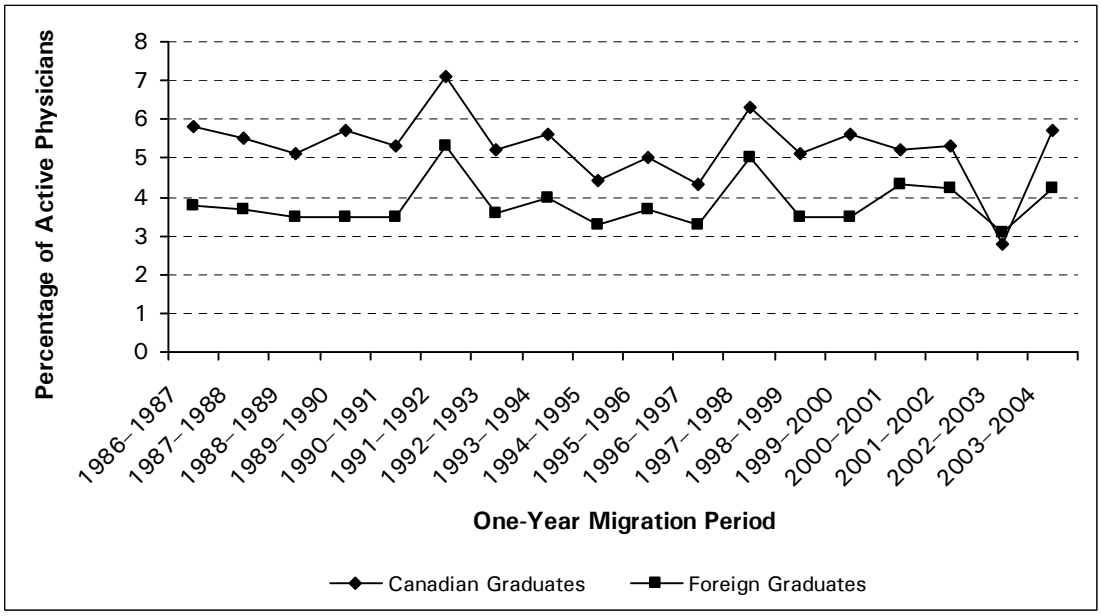
Source: SMDB, CIHI.

Figure 23. Percentage of Active Physicians by Place of Graduation, Who Were Interprovincial Migrants During One-Year Migration Periods, Canada, 1986–1987 to 2003–2004



Source: SMDB, CIHI.

Figure 24. Percentage of Active Physicians, by Place of Graduation, Who Were Intraprovincial Migrants During One-Year Migration Periods, Canada, 1986–1987 to 2003–2004



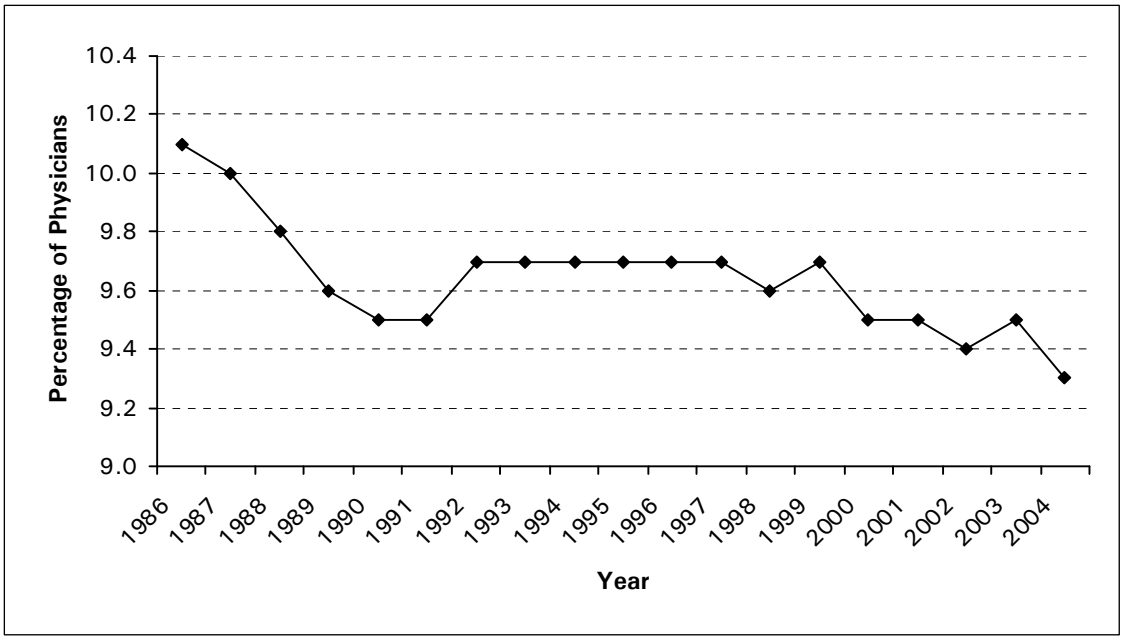
Source: SMDB, CIHI.

Initial Location: Urban or Rural

Small variations in the proportion of physicians in Canada who were located in rural and small-town areas of the country are shown in Figure 25. These figures are based on constant 2001 boundaries and therefore may not be identical to figures published elsewhere. From 1986 to 2004, there were roughly three patterns which emerge. There was a steady decline from 10.1% in 1986 to 9.5% in 1990 and 1991. After a slight increase from 1991 to 1992, the proportions of rural physicians remained constant at 9.7% from 1992 to 1999 (with a slight decrease in 1998). Since then, the proportion of physicians located in rural Canada has generally declined, reaching the lowest level of 9.3% in 2004.

Although there are methodological issues associated with boundary changes over this period of time, the 9% to 10% figure for physicians is less than half of the proportion of general population living in rural and small-town Canada. Based on boundaries current at the time of the 1991, 1996 and 2001 censuses, the proportions of the general population living in rural Canada were 22.6%, 22.2% and 20.6%, respectively. This general comparison is valid even if one limits the computation of the rural percentages of the general population to people 20 years of age or older. A similar finding would be observed if the comparisons were restricted to the general Canadian workforce 20 years of age and older. For example, in 2001, 9.5% and 19.4% of the physician workforce and the general workforce, respectively, were located in rural Canada.

Figure 25. Percentage of Active Physicians Located in Rural (Rural and Small-Town) Areas, Canada, 1986 to 2004



Note: Value axis does not start at zero.

Source: SMDB, CIHI.

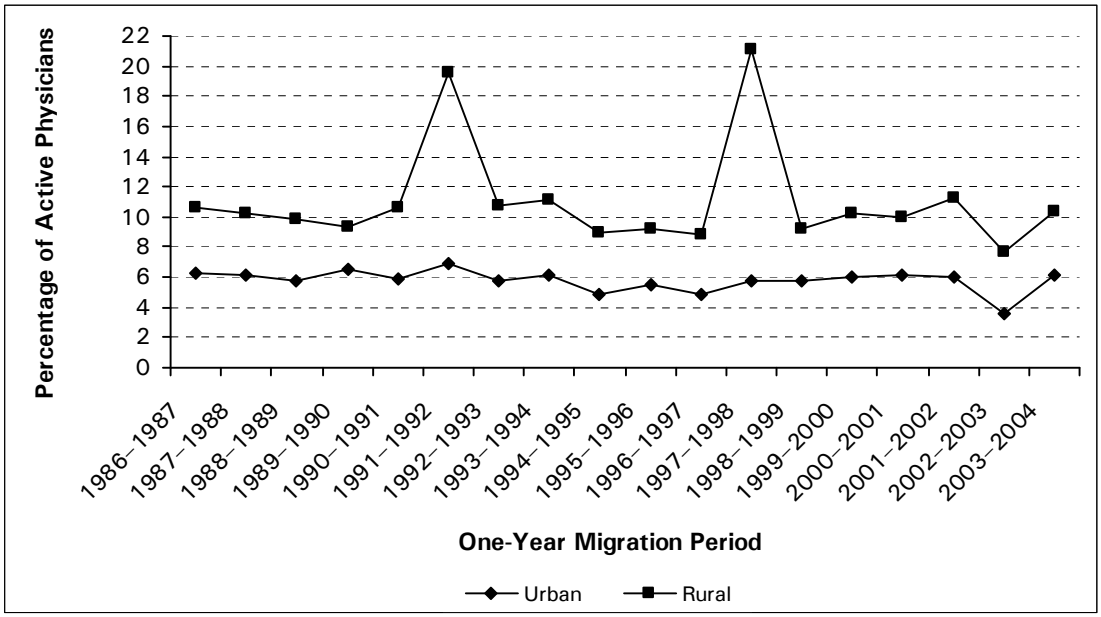
The results of the logistic regression analyses indicate that physicians living in rural Canada in 1986, 1991 and 1996 were 1.89, 2.53 and 2.79 times as likely to move in the following five years when compared to their urban counterparts. For the most part, urban–rural comparisons within those logistic regression analyses produced higher odds ratios than any other factor in the models.

Results from the analyses of one-year migration periods from 1986–1987 to 2003–2004 show more detailed similarities and differences, particularly the latter, in the general internal migration profiles of urban and rural physicians. Figure 26 provides a comparison, by urban–rural location, of the proportions of active physicians who were internal migrants in each of the one-year migration periods from 1986 to 2004. Figures 27 and 28 provide similar comparisons for interprovincial and intraprovincial migration, respectively. Table C11 in Appendix C provides the odds ratios and 95% confidence intervals generated from the logistic regression analyses for each of these three categories of internal migration.

The highlights of these illustrations include the following:

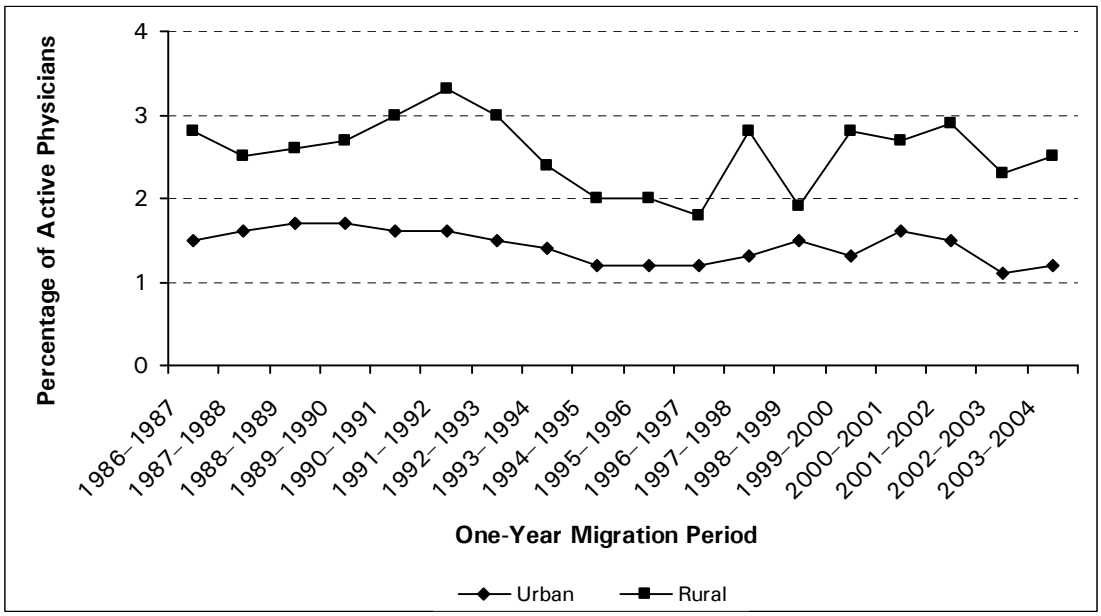
- Higher proportions of rural physicians than urban physicians have been internal migrants (Figure 26), interprovincial migrants (Figure 27) or intraprovincial migrants (Figure 28) in each of the one-year migration periods from 1986 to 2004.
- The differences in proportions for rural and urban physician internal migrants (Figure 26) and intraprovincial migrants (Figure 28) were relatively constant throughout this period, with the very obvious exceptions that occurred in 1991–1992 and again in 1997–1998. These spikes, where the proportions of rural physicians who moved from one community to another more than doubled from the norm, certainly should be subject to further exploration. Although they are slightly less apparent, there are also spikes in the proportions of rural physicians who moved from one province or territory to another that occurred at the same time (Figure 27).
- The differences in the proportions between rural and urban physicians who were interprovincial migrants tended to increase from 1986 to about 1992 or 1993 (Figure 27). With the exception of the 1997–1998 spike, the differences decreased until the 1998–1999 migration period, but increased after that time.
- All of the odds ratios associated with the initial urban–rural location variable that were computed for the one-year migration periods (Table C11) showed statistically significant differences between the internal migration patterns of rural and urban physicians. Note, in particular, the exceedingly high ratios of 3.0 and 4.3 for the intraprovincial movements in the 1991–1992 and 1997–1998 migration periods.

Figure 26. Percentage of Active Physicians by Rural–Urban Location in First Year of Migration Period, Who Were Internal Migrants During a One-Year Migration Period, Canada, 1986–1987 to 2003–2004



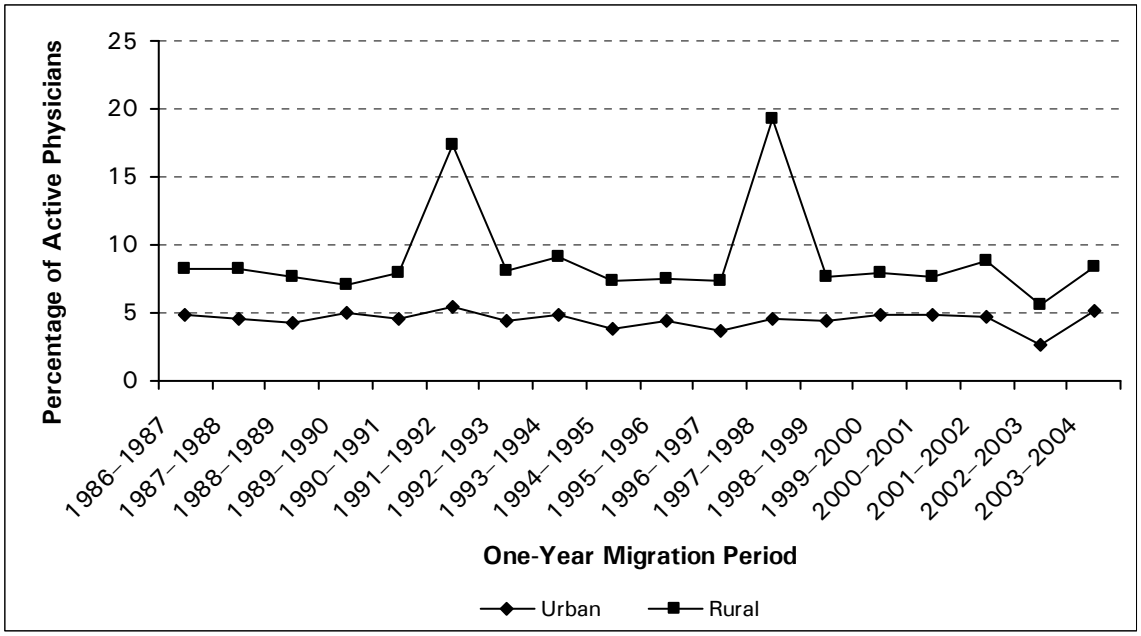
Source: SMDB, CIHI.

Figure 27. Percentage of Active Physicians by Rural–Urban Location in First Year of Migration Period, Who Were Interprovincial Migrants During a One-Year Migration Period, Canada, 1986–1987 to 2003–2004



Source: SMDB, CIHI.

Figure 28. Percentage of Active Physicians by Rural–Urban Location in First Year of Migration Period, Who Were Intraprovincial Migrants During a One-Year Migration Period, Canada, 1986–1987 to 2003–2004



Source: SMDB, CIHI.

Interprovincial Origins, Destinations and Ratios

In one of the headings from an analysis on the mobility status of Canadians, based on the 2001 Census of Population, Statistics Canada proclaimed, "We're still heading west, but stopping at the Rockies."[32] Over the period of time from 1996 to 2001, Alberta replaced B.C. as the destination of choice for many of Canada's interprovincial migrants. But that analysis also recognized that other provinces, notably Ontario, also experienced net gains of population at the same time. Were these destinations the same for Canada's physicians?

This section focuses on the interprovincial movements of the Canadian physician workforce. Selected five-year and one-year migration periods are employed and comparisons of the primary provincial origins and destinations of physician interprovincial migrants are compared with those of the general population and the general Canadian workforce, especially for the 1986-to-1991 and the 1996-to-2001 migration periods. Therefore, much of this section is based on the computation of a series of transition matrices which tabulate the counts of physicians who have moved from one origin province or territory to a destination province or territory. These were computed for each of the migration periods described above. Using SMDB data for the physicians who were active in both 1996 and 2001, an example of one of these transition matrices may be found in Appendix C (Table C12).

Analyses of physician-to-population ratios (number of physicians per 100,000 population) are also included in this section. Historical ratios are illustrated for Canada, as a whole, and for each province and territory for each year from 1986 to 2004. The particular focus, however, is on the examination of the influences that components of growth, particularly interprovincial migration, have on changing these ratios.

Principal Destinations by Origin

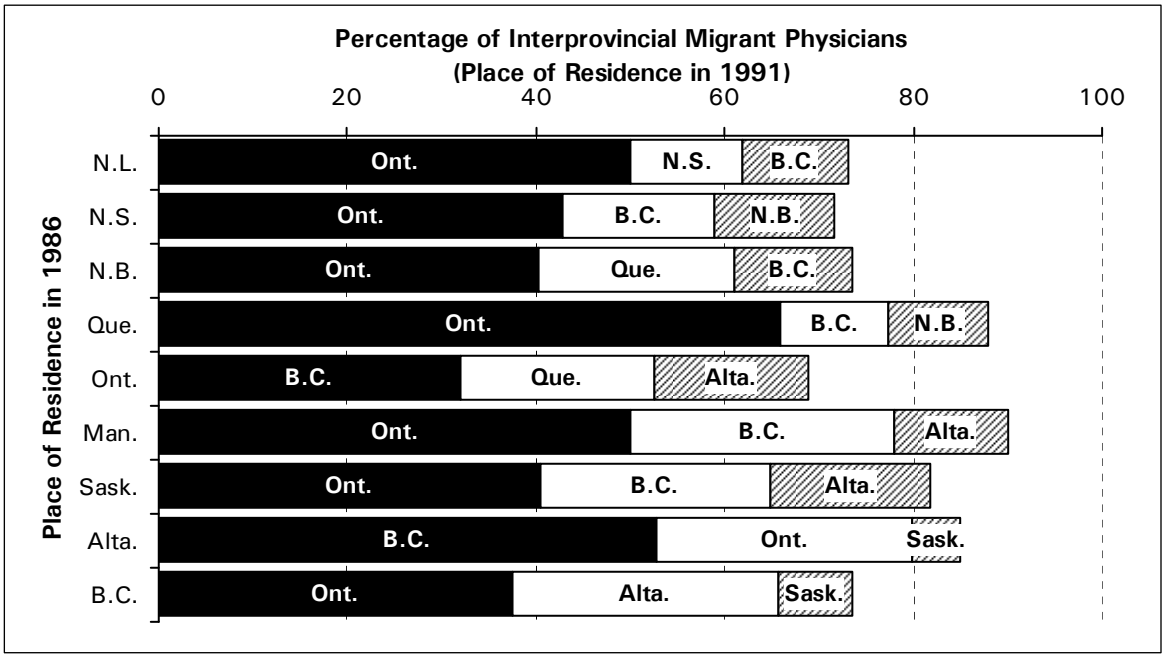
In terms of interprovincial migration, Table C12 (Appendix C) illustrates the fact that almost all provinces send and receive physician migrants. This is less so for Prince Edward Island and the territories because of their smaller overall numbers of physicians. However, that table also indicates that some provinces are generally more attractive to those migrants than others. The first three principal destinations are illustrated here, for physicians and the general population, with examples from two five-year migration periods, 1986 to 1991 and 1996 to 2001. Additional details of the principal destinations for the 3 five-year and 18 one-year migration periods may be found in Table C13 (Appendix C).

In Figure 29, for example, 190 physicians who were practising in Manitoba in 1986 had set up practice in another province or territory by 1991. Of these physicians, 50% migrated to Ontario, while 28% and 12% moved to B.C. and Alberta, respectively. Although Manitoba received interprovincial migrants during this period of time, that province was not the principal destination for physicians migrating from any other province or territory.

For physicians who were active in Canada in both 1986 and 1991 and who moved from one province to another, Ontario was the primary or first-choice destination for those who migrated from any province other than Alberta (Figure 29). This includes migrants from P.E.I. as well (see Table C13 in Appendix C), although that province is not included in the diagram due to small cell sizes. B.C. was the principal destination for Alberta interprovincial physician migrants and also for those physicians who moved from Ontario. For the territories, also not included in Figure 29 because of small cell sizes, Ontario was the first choice of physicians who moved from the Northwest Territories (including areas of Nunavut), but Alberta was the primary destination for those who migrated from the Yukon.

Ontario and B.C. are often considered "magnet" provinces for interprovincial migrants in Canada. These larger provinces tend to attract more migrants than others. This was the case for Canada's physicians during the 1986-to-1991 migration period. If one of these magnet provinces was not a primary destination choice, it was most frequently a province close by, usually a neighbouring province. This is illustrated by the second or third principal choices of physicians shown in Figure 29. For example: Quebec, a neighbouring province, was one of the primary destinations for physicians migrating from either Ontario or New Brunswick; New Brunswick, a neighbouring province, was a primary destination for physicians moving from Nova Scotia or P.E.I.; and Saskatchewan, as either a neighbouring or close-by province, was a principal destination for interprovincial physician migrants from Alberta and B.C..

Figure 29. Principal Migration Destinations as a Percentage of Interprovincial Migrant Physicians by Province of Residence, 1986 to 1991

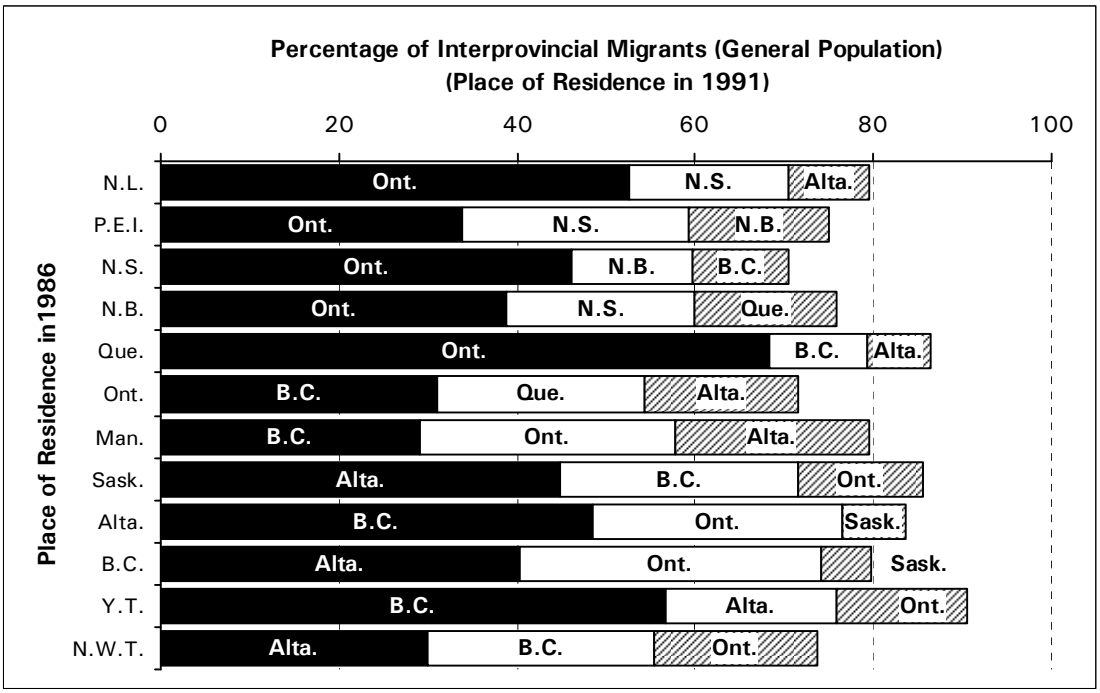


Note: Data from P.E.I. and the territories have been suppressed due to small cell sizes.

Source: SMDB, CIHI.

Magnet and neighbouring provinces were also the primary interprovincial migrant destinations for the general Canadian population in the 1986-to-1991 migration period (Figure 30). However, while there were many similarities, there were differences when the principal destinations of the general population are compared with those for physicians. This was particularly the case in western Canada, where neighbouring provinces tended to be more important as the first-choice destination of the general population compared with Ontario, the first-choice destination for physicians.

Figure 30. Principal Migration Destinations as a Percentage of All Interprovincial Migrants of Canada by Province/Territory of Residence, 1986 to 1991



Source: Census of Population, Statistics Canada.

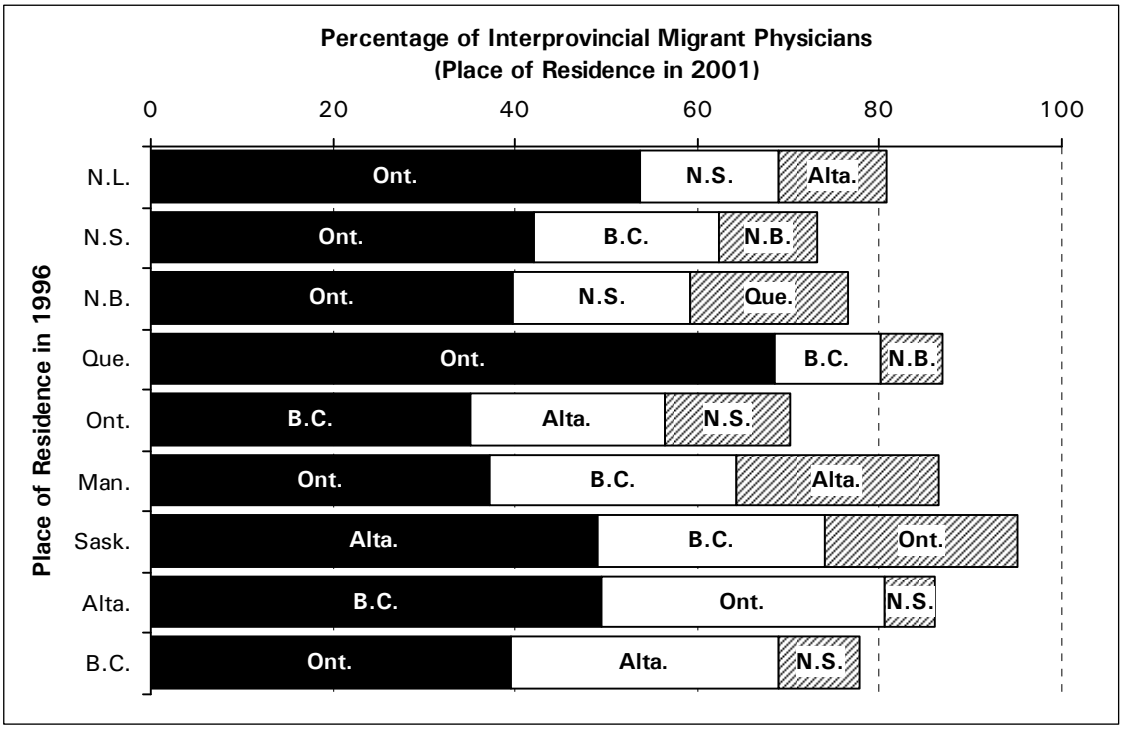
Many of the interprovincial destination patterns seen for both physicians and the general population in the 1986-to-1991 migration period appear again in 1996 to 2001. For example, in 1986 to 1991, physicians who moved out of Nova Scotia chose, in order of preference, to relocate in Ontario, B.C. and New Brunswick (Figure 29). The same order of preference for Nova Scotian physicians moving away from that province was seen in 1996 to 2001 (Figure 31). The 1986-to-1991 and 1996-to-2001 destination patterns were also the same for physician migrants from Quebec and Manitoba. A similar comparison can be made for the destination patterns for the general population, where the order of preference was identical in both migration periods for interprovincial migrants who moved away from Quebec, Saskatchewan, Alberta and B.C. (Figure 32).

Perhaps the most important difference between 1986 to 1991 and 1996 to 2001 is the rising importance of Alberta as a prime destination for interprovincial migrants, in the general population particularly and for the Canadian physician workforce to a lesser extent. This was seen as Alberta replaced other principal destinations in various origin provinces and/or shifted from a third most important destination to a second, or from second to third.

Examples of these replacements and shifts for the general population can be seen by comparing Figure 30 with Figure 32. By 1996 to 2001, Alberta had replaced New Brunswick and Quebec as the third most important destination for interprovincial migrants moving away from P.E.I. and New Brunswick, respectively. Alberta not only replaced B.C., but also became the second principal destination for migrants from Nova Scotia. And Alberta shifted from the third to the second and from the second to the first principal destination for interprovincial migrants in the general population who moved away from Ontario and Manitoba, respectively.

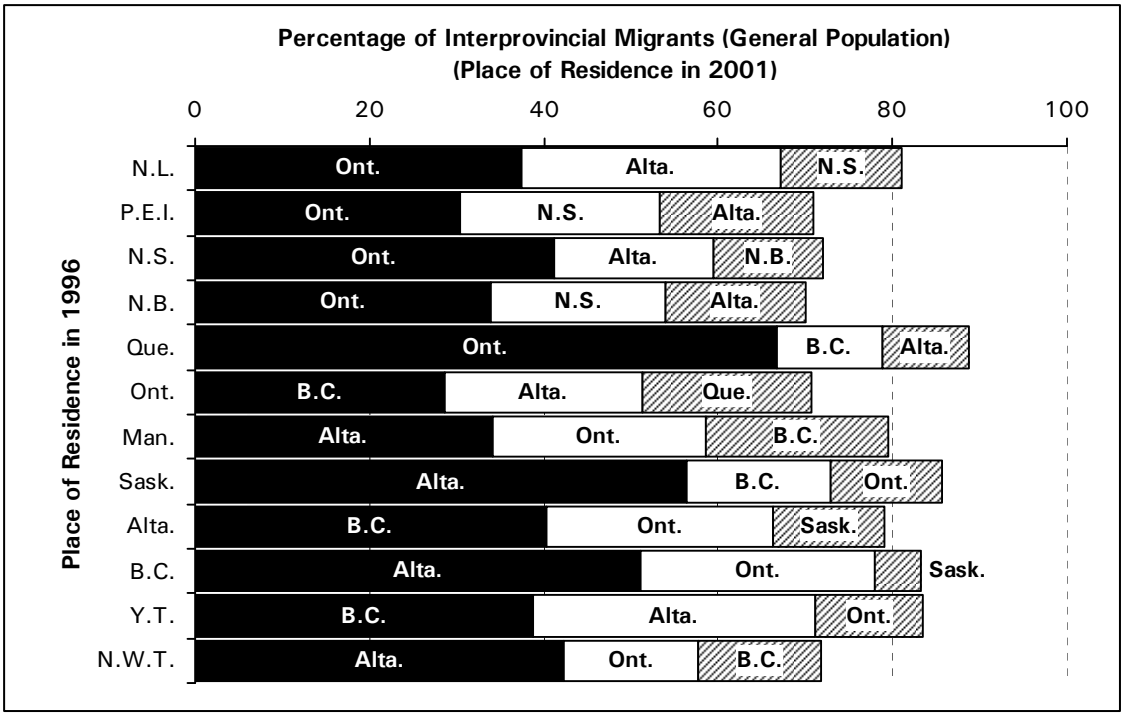
In comparison, for the physician workforce, by 1996 to 2001 (Figure 31), Alberta had replaced B.C. (Figure 29) as the third most important destination for interprovincial physician migrants from Newfoundland and Labrador. As well, Alberta had moved from third to second and from third to first primary interprovincial destination for physicians who had moved from Ontario and Saskatchewan, respectively. The relative and increasing importance of Alberta as a prime destination is also reflected in the decreasing importance of Ontario and B.C.. Although the numbers would have been small and therefore would not have had a major impact on the overall patterns, by the 1996-to-2001 migration period, Ontario had moved from first to third place in terms of principal destinations for physician migrants from P.E.I. (Table C13, Appendix C). And by 1996 to 2001, B.C. was no longer in the top three destinations for physicians who moved from New Brunswick.

Figure 31. Principal Migration Destinations as a Percentage of Interprovincial Migrant Physicians by Province of Residence, 1996 to 2001



Source: Statistics Canada, Census of Population.

Figure 32. Principal Migration Destinations as a Percentage of All Interprovincial Migrants of Canada by Province/Territory of Residence, 1996 to 2001



Note: Data from P.E.I. and the territories have been suppressed due to small cell sizes.

Source: SMDB, CIHI.

Net Interprovincial Migration

The previous discussion concerning the primary destinations of interprovincial physician migrants emphasizes where they are coming from and where they are going within Canada. Equally important, if not more so, is an understanding of the balance between these two directional movements.

Simple counts of the numbers of in-, out- and net migrants for each province and territory for both the one-year and five-year migrations considered in this study are provided in Table C14 (Appendix C). Some of the highlights of the one-year migration periods that are illustrated by that table are listed below:

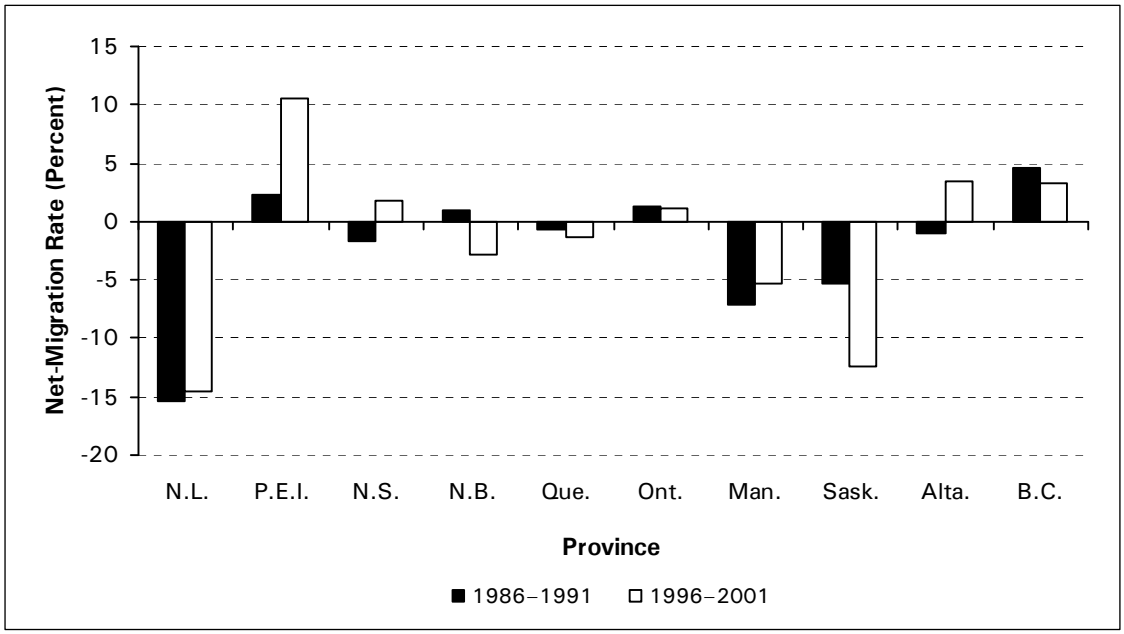
- B.C. is the only province where there was a positive net-migration count (that is, more physicians moved to the province than moved away) in each of the one-year migration periods from 1986–1987 to 2003–2004.
- Newfoundland and Labrador, Manitoba and Saskatchewan had a negative net-migration count (that is, more physicians moved away than moved to these provinces) in each of the one-year migration periods from 1986–1987 to 2003–2004.
- Of the 18 one-year migration periods from 1986 to 2004, P.E.I., Ontario and Alberta had some of the fewest annual negative net-migration counts (two, three and five years, respectively), with positive net migration in all other years.

- Of the 18 one-year migration periods from 1986 to 2004, Quebec and Nova Scotia had some of the fewest annual positive net-migration counts (two and five years, respectively), with all others experiencing net losses. In one of those years for Quebec, there was an equal number of in- and out-migrants.
- In New Brunswick, one-third of the 18 one-year migration periods had a negative net-migration count while all others were positive. No temporal pattern is apparent.
- In accordance with the previous discussion of the changes in principal destinations of interprovincial physician migrants, all five years in Alberta with net losses occurred in the first 10 of the 18 migration periods examined. In each subsequent year, more physicians moved to Alberta than moved away.

In terms of five-year migration periods, Figure 33 provides a graphical comparison of the net-migration rates experienced by each province in 1986 to 1991 and 1996 to 2001. Some of the highlights of the net-migration patterns that are illustrated in that figure are noted below:

- Newfoundland and Labrador, Quebec, Manitoba and Saskatchewan had negative net-migration rates in both of these migration periods. For Newfoundland and Labrador and Manitoba, the net losses decreased in 1996 to 2001 compared with the increased net losses through interprovincial migration experienced by Quebec and Saskatchewan.
- P.E.I., Ontario and B.C. had positive net-migration rates in both of these migration periods. The positive rates decreased in value for both Ontario and B.C. in 1996 to 2001, but increased for P.E.I.. Note that the P.E.I. rates must be treated with caution, as they are based on relatively small numbers of physicians moving into and out of that province.
- Nova Scotia, New Brunswick and Alberta had a positive or negative net-migration rate in one of the two migration periods, but not both. New Brunswick experienced a net gain of physicians through interprovincial migration in 1986 to 1991, but had a net loss in 1996 to 2001. The reverse occurred for Nova Scotia and Alberta. Excluding P.E.I., Alberta had the highest positive net migration in the latter migration period.

Figure 33. Net Interprovincial Migration Rates for Active Physicians by Province, 1991 and 2001



Source: SMDB, CIHI.

Physician-to-Population Ratios

Trends From 1986 to 2004

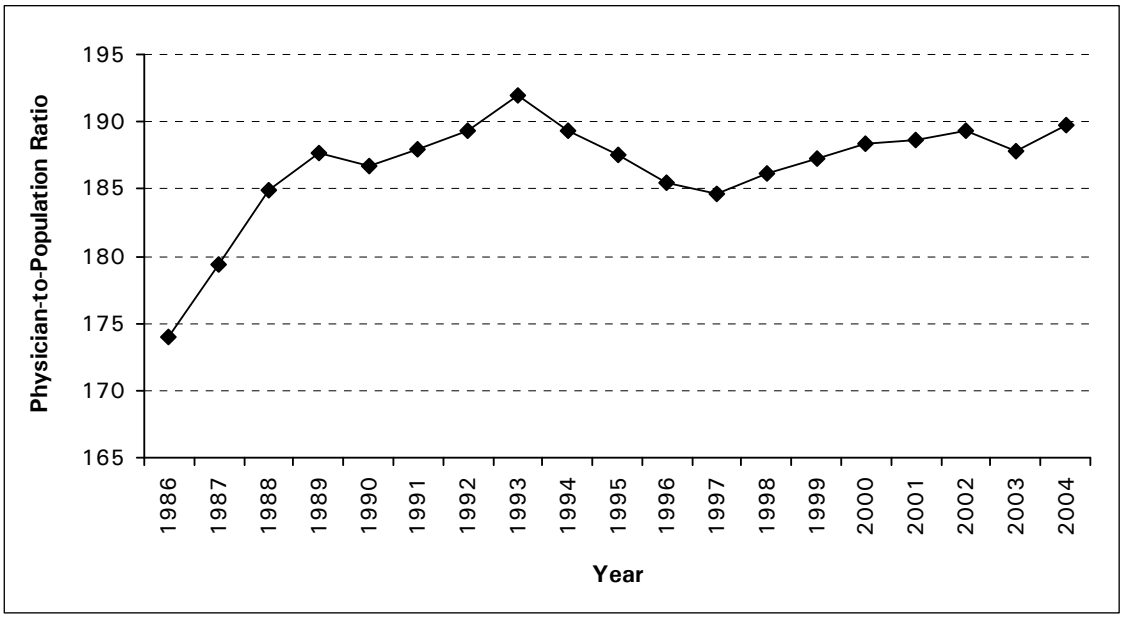
Long-term (1961 to 2005) numbers of population per physician are provided in the most recent CIHI release in the *Supply, Distribution and Migration of Canadian Physicians* publication series (Table D.2 of that report), which is based on physician data drawn from the SMDB.[10] The figures presented in the present report differ from those in the CIHI SMDB publication for several reasons—a shorter time frame (1986 to 2004) and the ratios are expressed as the number of physicians per 100,000 population. But the most important difference is due to the fact that the previous CIHI publication included interns and residents. Physician-to-population ratios in the current work are based solely on the numbers of active physicians.

In general, the number of active physicians per 100,000 population in Canada increased over the period from 1986 to 1993. As indicated in Figure 34, that time period also included a slight decrease from 1989 to 1990. This period included both the lowest (174 physicians per 100,000 population in 1986) and the highest (192 physicians per 100,000 population in 1993) ratios over the entire 1986-to-2004 study period discussed in this report.

A second phase in the physician-to-population ratios occurred from 1993 to 1997, when the numbers of physicians per 100,000 population decreased from 192 to 185. Since that time, the ratios have been increasing. By 2004, the physician-to-population ratio in Canada had almost reached the highest value that had occurred in 1993.

These national ratios considerably mask the geographical variations in physician-to-population ratios at the level of census divisions that have been discussed elsewhere.[4] They also vary considerably at the provincial/territorial level, which can be seen by examining Table C15 in Appendix C. For example, from 1986 to 2004, provinces such as P.E.I., New Brunswick and Saskatchewan never had a year when their physician-to-population ratios were higher than 174, the lowest ratio experienced at the national level. Conversely, other than in 1986, provinces such as Quebec and B.C. never had a year when their physician-to-population ratios were below 192, the highest ratio experienced at the national level over this same period of time.

Figure 34. Number of Active Physicians per 100,000 Population, Canada, 1986 to 2004



Note: Ratio excludes residents and interns.

Source: SMDB, CIHI.

Impacts Due to Migration

There are many reasons for periodic increases and decreases to the physician-to-population ratios experienced by provinces or territories in Canada. The variations are due to net changes in the growth or decline in physician numbers that are not associated with migration, net interprovincial migration and net international migration. In this study, net non-migrant increases or decreases are based on the differences in the numbers of physicians who have moved into or out of active practice for any one of a number of reasons: new graduates just starting up practice, former military physicians setting up civilian practice or vice versa, beginning or ending of sabbaticals, semi-retirements or other forms of leaves, taking full retirement, death, etc. In the present analyses, these reasons were not enumerated. Rather, "net non-migrants" means simply "system" gains or losses.

Details of the influences of net non-migrant physicians and interprovincial and international migration on physician-to-population ratios are provided in Table C16 (Appendix C) for each province and territory for each of the one-year migration periods from 1986 to 2004. That table indicates that there is considerable year-to-year variation in the impact on the physician-to-population ratios associated with these components of growth. However, in general, migration has tended to decrease these ratios in most years of the study period for Newfoundland and Labrador, Quebec, Manitoba and Saskatchewan. Conversely, overall increases in the ratios have occurred most commonly in B.C. For the remaining provinces, the impacts are more variable from year to year. In Alberta, for example, net losses through a combination of interprovincial and international migration occurred only prior to the 1996–1997 migration period.

In general during the study period, non-migrant growth had the most important influence on year-to-year changes in provincial or territorial physician-to-population ratios. With the exception of P.E.I., provinces rarely had fewer physicians entering the system than leaving for reasons other than migration. More often than not, net interprovincial migration had a greater impact on these ratios than net international migration. In the context of a "brain drain," there is some debate regarding the relative impact or importance of international migration on Canada's physician supply.[49, 50] Although net international losses are of concern, with respect to physician-to-population, the observations presented here echo the statement quoted in the introduction of this report that "the interprovincial flow of physicians is far larger than the flow to [the U.S.]."[6]

Migration Frequency

The final analytical section of this report briefly explores some of the ways that the SMDB might be used in examining various measures that may be associated with recruitment and retention, particularly the latter. As an administrative database, the SMDB cannot tell us about the multitude of push-pull factors (family, community and professional) that influence a physician's decision to move or to stay in a particular practice locale or environment. On the other hand, the SMDB can provide related information:

- How often do physicians move within Canada?
- How soon does internal migration occur after a physician has set up practice in a particular location?
- How long do physicians practise in the same geographical location?

As there are numerous possible combinations and permutations of this type of analysis that one could undertake using the SMDB, only a limited number of examples are provided.

Frequency and Timing of Interprovincial Migration

Two cohorts of physicians were examined to explore the frequency and timing of interprovincial mobility. In the first, physicians were considered to have initially established their practices in 1987 (n = 2,195). That is, they were not active in 1986, but subsequently were active in each year from 1987 to 2004. For the second cohort (n = 1,181), physicians were not active in any year from 1986 to 1993, but were active throughout 1994 to 2004. Potentially, then, migration might have occurred during the 18-year and 11-year spans of time for the 1987 and 1994 cohorts, respectively.

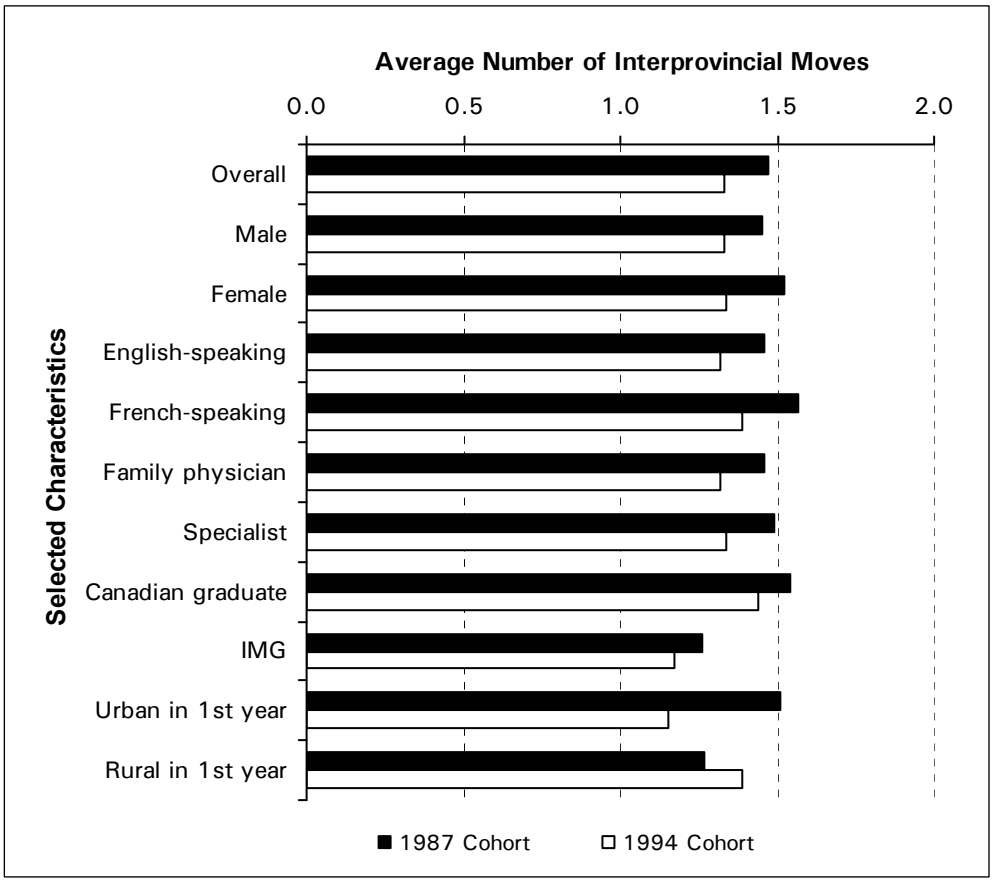
No interprovincial moves were made by 80% and 79% of the physicians in these 1987 and 1994 cohorts, respectively. For those who did move interprovincially, Figure 35 shows the average number of moves and Figure 36 shows the average number of years after practice establishment when the first interprovincial move occurred. In both of these diagrams the measures are provided for both cohorts overall and by selected physician characteristics.

Some of the highlights of these analyses include the following:

- Only 20% of the physicians in these cohorts moved from one province or territory to another.
- Of the physicians who moved interprovincially, the average number of interprovincial moves that they made was 1.5 for the 1987 cohort and 1.3 for the 1994 cohort; and these physicians moved to another province or territory, on average for the 1987 and 1994 cohorts, 4.4 years and 3.4 years after having established their practices, respectively.
- In spite of the difference in the time spans in which migration might have occurred for these two physician cohorts, the frequency and timing of their interprovincial mobility was very similar.

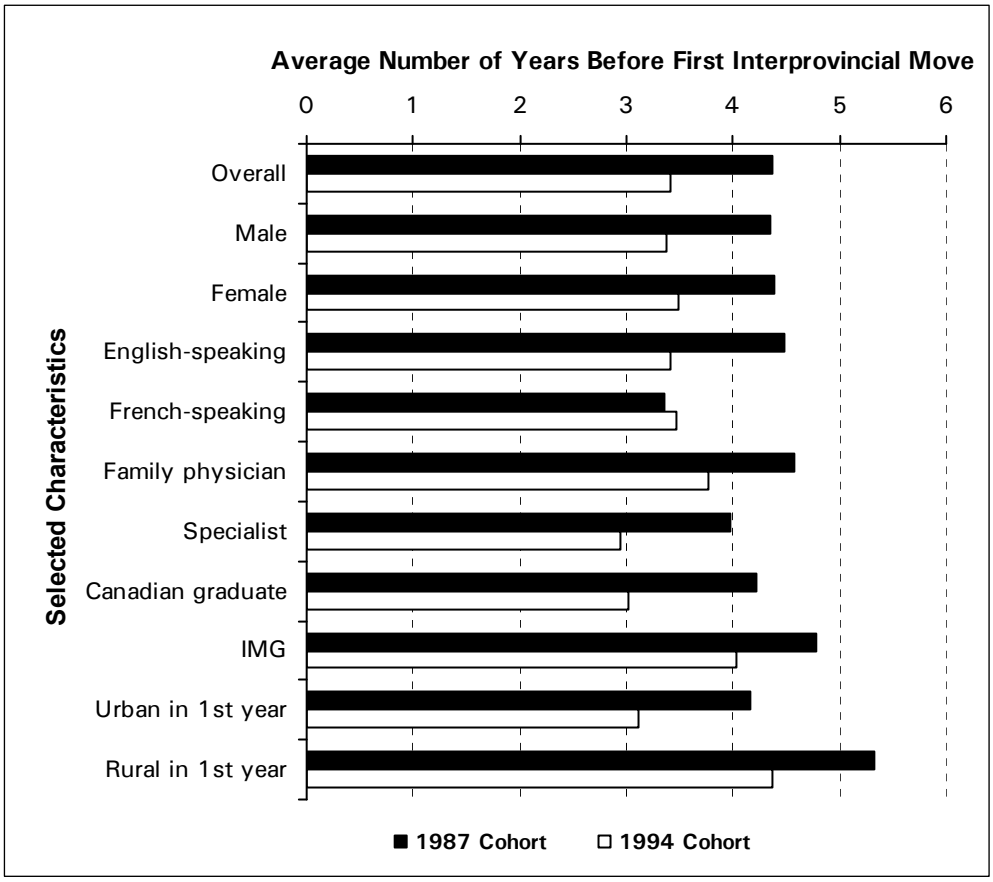
In terms of physician migration and distribution, this analysis suggests that the first five years after setting up practice is critical. Physicians are less likely to move to another province or territory after that period of time. Although not shown here, similar conclusions are found when examining the frequency and timing of intraprovincial migration patterns.

Figure 35. Average Number of Interprovincial Moves Over the Period From 1987 to 2004 for the 1987 Physician Cohort and Over the Period From 1994 to 2004 for the 1994 Physician Cohort



Source: SMDB, CIHI.

Figure 36. Average Number of Years Before the First Interprovincial Move for the 1987 and 1994 Cohorts of Physicians by Selected Characteristics



Source: SMDB, CIHI.

Length of Practice in Rural and Urban Canada

To examine the number of years that physicians who migrate practised in either rural or urban areas of the country, a cohort (Cohort A, n = 2,195) from the SMDB was selected with the following three characteristics: physicians not active in 1986; but active in each of the five years from 1987 to 1991; and also active in each of the thirteen years from 1992 to 2004. Within this cohort, physicians were labeled as "rural" or "urban" if they did not contribute any years of practice in urban and rural areas, respectively.

The average numbers of years that these physicians practised in rural and urban areas of the country are shown in Figure 37. Overall averages are provided, as well as by selected physician characteristics. Over this 13-year period, rural physicians practised an average of 9.5 years in that environment, while urban physicians remained predominantly in urban areas of the country, on average 12.6 years. Generally, these differences are applicable for the majority of the physician characteristics shown.

Two additional cohorts of physicians were then constructed. As with Cohort A, both included physicians who were active in each of the 13 years from 1992 to 2004. They differed only in the number of active years prior to 1991: Cohort B, physicians not active in 1986 or 1987; Cohort C, physicians not active in 1986, 1987 or 1988.

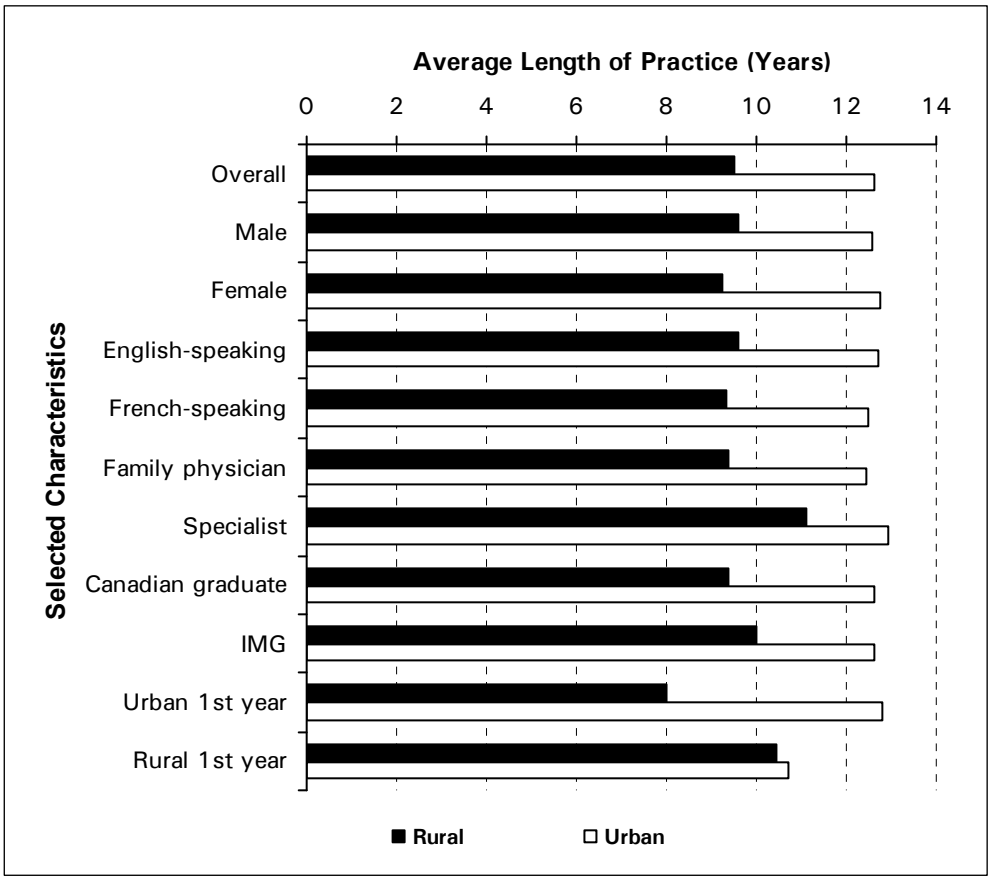
Using the three cohorts, the number of years that physicians were located in rural Canada prior to 1992 was correlated with the number of years spent in rural practice from 1992 to 2004. For these groups of physicians, moderately high positive correlation coefficients were computed: $r = 0.68$, $p < 0.001$ for cohort C (three years prior); $r = 0.72$, $p < 0.001$ for cohort B (four years prior); and $r = 0.78$, $p < 0.001$ for cohort A (five years prior). That is, the more years spent in rural Canada in the first few years after setting up practice the longer the rural practice.

Combining these two analyses and earlier discussions, rural physicians:

- tend to be more mobile than their urban colleagues;
- their mobility patterns include movement away from rural areas of the country, which decreases the average length of rural practice; however,
- length of rural practice is greater if a physician's first year of practice is in a rural location; and
- the longer that one can keep a physician in a rural locale during those first five years of practice, the more likely that he or she will be retained in rural Canada.

The associations presented here are based on very simple averages and bivariate analyses. Although the factors which influence retention are much more complex than this, such analyses could form the basis for the generation of more complex multivariate models of physician retention.

Figure 37. Average Number of Years that Physicians Practised in Rural and Urban Canada, Overall and by Selected Physician Characteristics, 1992 to 2004



Source: SMDB, CIHI.

Summary Notes

This report is unique within this series of health provider migration reports because of the use of the physician database from CIHI (Scott's Medical Database, or SMDB). The use of the SMDB database allowed for enhanced analysis of the distribution and migration of physicians in Canada.

In general, physician migration patterns were similar to those of the general population. When specific physician characteristics were examined, the findings suggest that:

- Younger physicians were more likely to migrate than older physicians.
- Interprovincial migrants are on average younger than intraprovincial migrants who, in turn, are younger than non-migrants.
- The differences between male and female physician migration has decreased, especially with respect to interprovincial migration, where the proportions for both female and male physicians are now very similar.
- Higher proportions of female physicians move from community to community (intraprovincial migration) than their male counterparts.
- Higher proportions of English-speaking physicians migrate interprovincially.
- The opposite is true for intraprovincial migration, where French-speaking physicians are more than twice as likely as English-speaking physicians to move from one community to another.
- The internal migration patterns of physicians by specialty category are complex, with higher proportions of migrant specialists than migrant family physicians in some years but not others.
- Throughout the study period, rural physicians have been more mobile in all forms of internal migration than physicians located in urban areas of the country.
- Although there are some differential impacts due to physician characteristics (sex, language, specialty, etc.), the frequency and timing of internal migration by physicians tends to be similar. Based on a limited sample, physicians who migrate interprovincially tend to do so, on average, between one and two times over the study period; if a physician is going to move out of a province or territory, he or she will usually do so within the first five years of establishing a medical practice.

Appendix A—Methodological Notes

The principal data set employed in the analysis of physician distribution and internal migration was the Scott's Medical Database (SMDB), based on data from each of the individual years of that database from 1986 to 2004, inclusively. Some of the results of the SMDB analyses are compared with those of the general population using the components of growth (*Annual Demographic Statistics 2004*[51]) published by Statistics Canada.

For all other health care providers in the *Distribution and Internal Migration* series, data were derived from the Census of Population. Custom tabulations were prepared by Statistics Canada using 1991, 1996 and 2001 census data. Even though the focus of the present report is on analyses of the SMDB, some results from the census tabulations are also included. In this appendix, therefore, methodological steps for both are included. By including both sets of methodologies here, common and unique similarities, differences and limitations can be reviewed.

Geographical Units of Analysis and Urban–Rural Designations

a) Census

The geographical distribution of each of these health occupations is illustrated using counts and ratios for provinces and territories and for the urban–rural categories that are illustrated below. The health-care-provider-to-population ratios are computed and reported as the number of health care providers per 10,000 or 100,000 population. The former rate (that is, per 10,000 population) is employed for health occupations whose overall totals are relatively high. Temporal comparisons of the counts and ratios are examined using three census years (1991, 1996 and 2001).

The data provided by Statistics Canada for this study were aggregated to each of the following Standard Geographical Classification (SGC) units[52]: province/territory, census division and census subdivision.

Note that:

Census subdivision (CSD) is "the general term for municipalities (as determined by provincial or territorial legislation) or their equivalents (for example, Indian reserves, Indian settlements and unorganized territories)."[53] In this report, CSDs are used only indirectly, allowing for the identification of urban and rural communities.

"Census division (CD) is the general term applied to areas established by provincial law that are intermediate geographical areas between the municipality and the province/territory level. Census divisions represent counties, regional districts, regional municipalities and other types of provincially legislated areas. In Newfoundland and Labrador, Manitoba, Saskatchewan, Alberta, Yukon Territory, Northwest Territories and Nunavut, provincial/territorial law does not provide for these administrative geographical areas. Therefore, Statistics Canada, in cooperation with these provinces and territories, has created census divisions for the dissemination of statistical data."[53]

Given the very large numbers of CSDs (5,600 in 2001, for example), distribution and migration data from the CSDs have been aggregated by urban–rural categories based on the SGC system. 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). The combination of CMAs and CAs identifies large urban centres. All other CSDs are included as "rural and small-town Canada".

Large urban centre areas include:

- Census metropolitan areas: CMAs are very large urban areas with core populations of at least 100,000 people.
- Census agglomerations: CAs are large urban areas with core populations that range from 10,000 to just under 100,000 people.

Rural and small-town areas include:

- All communities located outside the boundaries of CMAs and CAs.

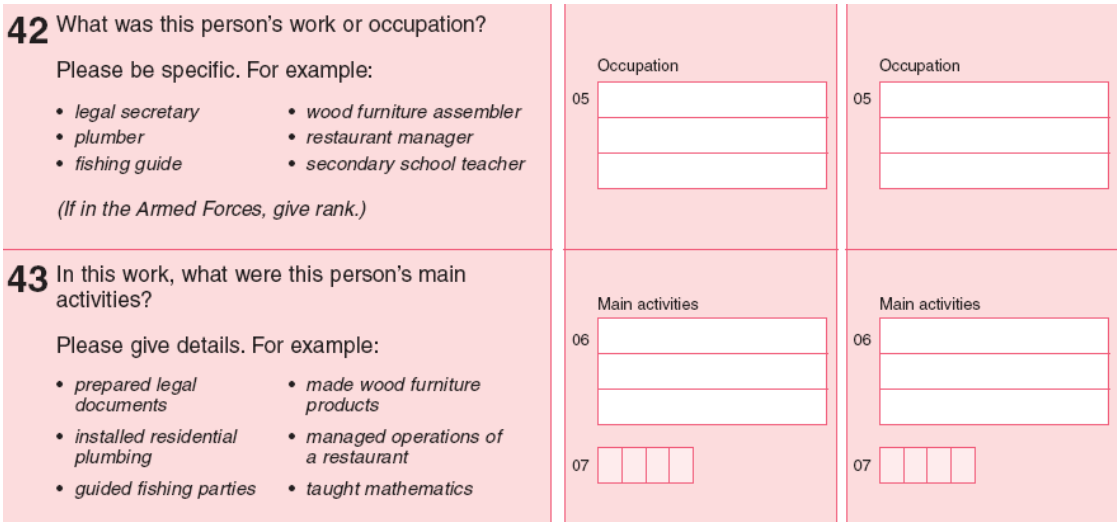
b) SMDB

The SGC terminology used for the analyses of physician data from the SMDB is identical that that for the census. However, using the postal codes that are included in each SMDB record, the geographical location of physicians in each of the years from 1986 to 2004 were assigned to the SGC units of the 2001 census. These constant boundaries enable a comparison of SMDB data with the annual population estimates provided in Statistic Canada's annual population estimates.

Health Occupations

a) Census

In each of the long-form questionnaires (completed by 1 in 5 households) for the censuses used in this study, there have been questions which seek out the occupation of respondents 15 years of age and older in each household. For example, the relevant 2001 census questions are shown below:



42 What was this person's work or occupation?

Please be specific. For example:

- *legal secretary*
- *plumber*
- *fishing guide*
- *wood furniture assembler*
- *restaurant manager*
- *secondary school teacher*

(If in the Armed Forces, give rank.)

Occupation

05

Occupation

05

43 In this work, what were this person's main activities?

Please give details. For example:

- *prepared legal documents*
- *installed residential plumbing*
- *guided fishing parties*
- *made wood furniture products*
- *managed operations of a restaurant*
- *taught mathematics*

Main activities

06

07

Main activities

06

07

Based on the information from these two questions, census coders group each respondent into one of the categories of the 2001 National Occupational Classification for Statistics.[54, 55] The 1991 and 1996 census questions were similar, but respondents in those years were grouped using the 1991 Standard Occupational Classification. For the present series of reports, the health occupations of interest were classified using codes and coding definitions identical to both the 1991 and 2001 classification systems.[54]

The target population for this study was selected from the broad occupational category referred to as Health Occupations. This analysis excludes those occupations in this broad category defined by Statistics Canada that are vaguely defined (for example, "other occupations in . . . ," etc.) and those dealing with animals (for example, veterinarians). The table below lists the health occupations that are the subject of these reports. The table groups the occupations as they were examined for this study and also identifies the four-character code that is used to identify each of the occupations using the 2001 National Occupational Classification for Statistics/1991 Standard Occupational Classification. In the right-hand column of the table, a check mark (X) identifies those health occupations examined in the *Distribution and Internal Migration Series*. Tables and graphs for the remaining occupations may be obtained by visiting the CIHI website (www.cihi.ca).

	Code	Occupation Title
Nurses and Nursing Services		
X	D111	Head nurses and supervisors*
X	D112	Registered nurses*
X	D233	Licensed practical nurses
	D312	Nurse aides, orderlies and patient service associates
Technical Group		
X	D211	Medical laboratory technologists and pathologists' assistants
X	D212	Medical laboratory technicians
X	D214	Respiratory therapists, clinical perfusionists and cardio-pulmonary technologists
X	D215	Medical radiation technologists
X	D216	Medical sonographers
	D217	Cardiology technologists
	D218	Electroencephalographic and other diagnostic technologists
Rehabilitative Occupations		
X	D041	Audiologists and speech-language pathologists
X	D042	Physiotherapists
X	D043	Occupational therapists
Dental Group		
X	D013	Dentists
	D221	Denturists
X	D222	Dental hygienists and dental therapists
	D223	Dental technologists, technicians and laboratory bench workers
X	D311	Dental assistants
Other Occupations		
X	D031	Pharmacists
	D021	Optometrists
	D231	Opticians
	D022	Chiropractors
	D032	Dietitians and nutritionists

	Code	Occupation Title
	D234	Ambulance attendants and other paramedical occupations
Physicians		
X	D011	Specialist physicians†
X	D012	General practitioners and family physicians†

* In this study, the numbers for these two nursing groups (head nurses and supervisors plus registered nurses) have been added together and examined under the grouping registered nurses. This group also includes registered psychiatric nurses.

† In this study, the two physician groups (specialists and general practitioners/family physicians) are examined separately, as well as being added together to examine the distribution and internal migration of all physicians.

Using the language of Statistics Canada, the data sets employed for this part of the study are summarized below:

- Population 15 years and over by sex (3), age group (7), health occupation (30) for Canada, provinces and territories, census subdivisions; 20% sample data; 1991 Census.
- Population 15 years and over by sex (3), age group (7), health occupation (30) for Canada, provinces and territories, census subdivisions; 20% sample data; 1996 Census.
- Population 15 years and over by sex (3), age group (7), health occupation (30) for Canada, provinces and territories, census subdivisions; 20% sample data; 2001 Census.

The numbers in brackets for the data sets listed above identify the number of categories that were included in the data provided. These categories are described later in this appendix.

b) Scott's Medical Database

Scott's Medical Database (SMDB) (formerly the Southam Medical Database) is used by Scott's Directories (www.mdselect.com) to create the Canadian Medical Directory and mailing lists for commercial purposes. CIHI acquires a copy of this database annually to update CIHI's SMDB used to produce publications, handle ad hoc requests for information and fulfill special client-requested projects.[10]

In terms of occupation and in the context of the present report, physicians (using the SMDB element "physician type") are categorized as family medicine physicians, specialists or unknown.

"Family medicine physicians" (FPs) include 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.

The term "specialist" (SP) includes certificants of the Royal College of Physicians and Surgeons of Canada or the Collège des médecins du Québec.

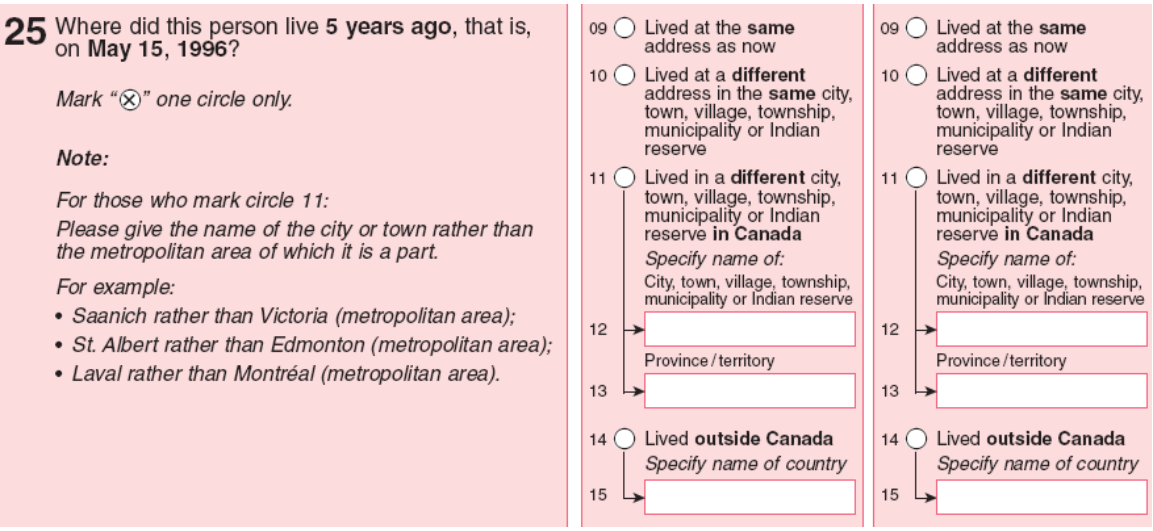
Note that the data sets for this project were created prior to the change in methodology adopted by CIHI that categorizes, where possible, non-certified specialists in Newfoundland and Labrador and Saskatchewan as specialists. As well, the terms "intern" and "resident" are not used in this report.

Scott's Directories defines physicians as "active" if they have an MD degree and a valid address (that is, mail sent to a physician is not returned). As well, active physicians include those who are administrators, teachers, etc., but who do not engage in any private clinical practice. The majority of this report is based on active physicians. However, the SMDB "medical activity code" also includes, among others, the following categories: "abroad" and "USA." These categories are used to identify the international components of migration composition. The latter terms are described below.

Mobility

a) Census

In census years that this study is based on, the long-form questionnaires have included a question that asks where all individuals in a household, 15 years of age and older, lived five years ago (see below):



25 Where did this person live **5 years ago**, that is, on **May 15, 1996**?

Mark "⊗" one circle only.

Note:

For those who mark circle 11:
Please give the name of the city or town rather than the metropolitan area of which it is a part.

For example:
- *Saanich rather than Victoria (metropolitan area);*
- *St. Albert rather than Edmonton (metropolitan area);*
- *Laval rather than Montréal (metropolitan area).*

09 ○ Lived at the **same** address as now
10 ○ Lived at a **different** address in the **same** city, town, village, township, municipality or Indian reserve
11 ○ Lived in a **different** city, town, village, township, municipality or Indian reserve **in Canada**
Specify name of:
City, town, village, township, municipality or Indian reserve
12 →
Province / territory
13 →
14 ○ Lived **outside Canada**
Specify name of country
15 →

09 ○ Lived at the **same** address as now
10 ○ Lived at a **different** address in the **same** city, town, village, township, municipality or Indian reserve
11 ○ Lived in a **different** city, town, village, township, municipality or Indian reserve **in Canada**
Specify name of:
City, town, village, township, municipality or Indian reserve
12 →
Province / territory
13 →
14 ○ Lived **outside Canada**
Specify name of country
15 →

Based on the results of this question, the five-year mobility status of Canadians can be determined and identified as follows:

Non-movers:
a) lived at the **same address** five years ago.

Movers:
a) Non-migrant: lived at a different address within the same community five years ago;
b) Intraprovincial internal migrant: lived in a different community within the same province five years ago;
c) Interprovincial internal migrant: lived in a different province five years ago; and
d) International migrant: lived outside of Canada five years ago.

Note: Statistics Canada labels the last category (international migrant) as "external migrant." This category is primarily made up of people who were born and raised in another country before moving to Canada. However, it also includes Canadians who were living outside of the country for a time and have returned to Canada.

The counts for each of these mobility status categories were provided by Statistics Canada for each of the geographical units previously described and for each health occupation. As well, the aggregate counts were provided for the total of all other occupations, here referred to as "non-health occupations" or the "general Canadian workforce." For this study, these counts were used to identify the **migration composition** of each province and territory, each census division and Canada as a whole. For each of these geographical units, migrants are identified as a proportion of the total population of the relevant occupational group. Then, the percentages of intraprovincial, interprovincial and international migrants are computed, both, as a proportion of the total number of migrants and as a proportion of the relevant total population.

Again, using the language of Statistics Canada, the data sets employed for this part of the study are summarized below:

- Population 15 years and over by age group (7), health occupation (30), place of residence five years ago (10) for Canada, provinces and territories, census subdivisions; 20% sample data; 1991 Census.
- Population 15 years and over by age group (7), health occupation (30), place of residence five years ago (10) for Canada, provinces and territories, census subdivisions; 20% sample data; 1996 Census.
- Population 15 years and over by age group (7), health occupations (30), place of residence five years ago (10) for Canada, provinces and territories, census subdivisions; 20% sample data; 2001 Census.

The migration composition data sets provided for this study do not indicate the source-destination links of the migrants. Separate data sets for **migration flow** analyses were provided that allowed for summary analyses of interprovincial as well as intraprovincial direction and rates of migration flows. These data sets are listed below (Note: this group of data was provided separately for males, females and the total of males and females together):

- Population 15 years and over by age group (7), health occupation (30), place of residence five years ago (252) for Canada, provinces and territories, census metropolitan areas and census agglomeration areas; 20% sample data; 1991 Census.
- Population 15 years and over by age group (7), health occupation (30), place of residence five years ago (252) for Canada, provinces and territories, census metropolitan areas and census agglomeration areas; 20% sample data; 1996 Census.
- Population 15 years and over by age group (7), health occupation (30), place of residence five years ago (252) for Canada, provinces and territories, census metropolitan areas and census agglomeration areas; 20% sample data; 2001 Census.

Due to the limitations of these data sets, migration flow analyses are limited to simple urban–rural categories by province or territory. Thus, two types of questions can be posed, with examples shown below:

- How many health care providers (by each health occupation) have moved from P.E.I. to Ontario?
- How many health care providers (by each health occupation) have moved from rural Nova Scotia to urban Alberta?

Cross-tabulations of the numbers of migrants from source areas and destination areas are illustrated for the total migrants for each health occupation. For each of these tabulations, referred to as transition matrices, provincial and/or rural–urban sums are computed to determine the numbers and proportions for each area's in-, out- and net migration. As well, sex and age group similarities and differences are presented.

When summarizing in-, out- and net migration, counts and rates are provided. Referring to the migrants and the total population of a selected health care provider group, the latter rates for any geographical region are computed as follows: [41]

- Out-migration rate equals the number of migrants who have moved out of the region, divided by the total population in that region, and expressed as a percentage.
- In-migration rate equals the number of migrants who have moved into the region, divided by the total population in that region, and expressed as a percentage.
- Net-migration rate is the difference between the in-migration rate and the out-migration rate and therefore can be either positive, negative or zero.

b) SMDB

Mobility status of Canada's physicians was identified from year to year (for example, comparing 1986 locations with 1987 locations, 1987–1988, etc.) and from census year to census year (1986 to 1991, 1991 to 1996 and 1996 to 2001) in a manner similar to that of the census. In the SMDB, address information corresponds to physicians' preferred mailing addresses. Postal codes for these mailing addresses were used to identify provincial and CSD locations. For interprovincial migration, province of preferred mailing address in "year 1" was compared with province of preferred mailing address in "year 2." For intraprovincial migration, CSD of preferred mailing address in "year 1" was compared with CSD of preferred mailing address in "year 2." As well, urban–rural migration could be identified, as CSDs can be allocated to large urban centres and rural and small-town areas of the country.

International migration of physicians can be identified using two categories of the SMDB medical activity code: abroad and U.S.A. The "abroad" category has been used in all of the SMDB years that are included in this study. It refers to a physician who has moved to an address outside the country. Scott's Directories added an additional category, "U.S.A.," in 1992 to indicate whether a physician had moved to the U.S. In the present study, these two categories have been combined to identify physicians located outside of Canada. "Year 1" to "year 2" comparisons can thus be used to identify "immigrants" and "emigrants."

Demographic Characteristics

Census

The following demographic characteristics are employed to compare and contrast the geographical distribution and internal migration of the health occupations:

- Sex: totals, male and female counts.
- Age group counts: under 20, 20 to 29, 30 to 39, 40 to 49, 50 to 59, 60 and up.

For the majority of the health occupations examined in this study, the under-20 age group was not relevant. Consequently, most of the tables and discussion in this report begins with a 20-to-29 age group.

SMDB

Sex and age groupings using the SMDB were similar to those just illustrated for the census data. Two other elements of the SMDB, not described elsewhere in this appendix, were used in this study.

The SMDB identifies a physician's preferred language for communication as either English or French. It should be recognized that this descriptor does not necessarily indicate whether a physician works exclusively in English or French. And it does not indicate whether his or her patients speak primarily English or French. Recognizing these limitations, this variable has been used as a proxy of whether English or French is a physician's principal language.

"Graduating country indicator" is an SMDB element that, for the purposes of this study, identifies whether a physician's MD degree was obtained from a Canadian medical school or from a foreign medical school. If the latter, a physician can be categorized as an international medical graduate (IMG).

Limitations

Data

Readers should be aware of some of the advantages and disadvantages of using Scott's Medical Database for this study as well as for other analyses related to the supply, distribution and migration of Canada's physician workforce. Data limitations are described in the most recent CIHI SMDB publication.[10] The following, taken directly from page 23 of that report, is of particular note for the analyses presented here:

"The SMDB, maintained by Scott's Directories, was designed for the production of mailing lists and for marketing purposes. Because of this, there are limitations that should be kept in mind when using the data.

It is important to note that when using these data for physician resource planning, there are advantages and disadvantages to using the SMDB. The data provide information on the level of physician supply and migration in Canada but should also be used in conjunction with other physician databases that identify and define physician workload. Counts in the SMDB will differ from other existing provincial or territorial and national systems; however, the difference is less than 5% nationally, and, in some specialty groupings, provincial and territorial figures are almost identical. The strengths of the SMDB are that it is historical in nature (which allows for analysis of time trends) and that it is the only national system that monitors international and between-jurisdiction migration."

Migration

The majority of migration studies, including this one, have a number of common limitations. Here, comparisons are made of where a physician lives at two points in time: current residence and residence one or five years ago. Within those periods, a person may have moved several times or, especially during a five-year migration period, moved and returned to the same location. Consequently, not all multiple moves are captured by the SMDB. Another difficulty specific to health care providers is the fact that location is equated with place of residence, as opposed to place of work. In this study, some error could be introduced with, for example, physicians whose homes are located in rural areas but who work in urban areas, or vice versa.

Determinants of Migration

Numerous elements contribute to what is known as a "migrant personality"[56] or are described as "push" and "pull" factors[8, 57, 58, 59] which play a part in influencing one's decision to migrate or not. This study restricted the variables that would be considered as determinants of migration to those that could be found in the SMDB itself. Administrative databases such as this do not include important migration push-pull factors such as those associated with lifestyle and family characteristics.

The omission of income may be considered a limitation of this study. However, the following references identify some of the mixed messages that have been generated from research in Canada regarding the influence of income as a determinant of migration for nurses and physicians:

- "In the 1990s, better salaries were not cited as the major reason for migration."[37] However, in the same publication, but without documentation, the authors go on to say that "The above not withstanding, salary remains an important motive for migration."
- Using aggregate-level data to examine the interprovincial migration of Canadian physicians, "The results suggest that differences in real income have a positive and significant effect on a physician's decision to migrate from one province to another . . . income differences are, however, not the only factor influencing a physician's choice to move."[35]
- Using individual-level data to examine the interprovincial migration of Canadian physicians, "Expected income in a province is a significant determinant of the choice of province of residence for physicians residing in Ontario and Saskatchewan . . . The effect, however, is not large in magnitude . . . Income in a province is not significant in other models or for physicians residing in other provinces besides Ontario and Saskatchewan."[60]

Privacy and Confidentiality

In accordance with the privacy and confidentiality protocols of CIHI,[61] two procedures were adopted in this report to ensure the anonymity of individual physicians.

First, the data released for the study followed the "no publication" policy of CIHI: "If physicians are registered with any provincial or territorial licensing authority but not licensed to practice (Medical Registration Indicator = 'no') and have indicated to Scott's Directories that they do not wish to have their information included in the CMD (Canadian Medical Directory) (Publication Status Indicator = 'do not publish') then the record identified in the SMDB at CIHI as having 'no publication' status is excluded for the purposes of all analyses and publication."[62]

Secondly, in a manner somewhat similar to that in the release of data from the CIHI Registered Nurses Database,[63] counts in the data tables were suppressed if they ranged from 1 to 4 if their presentation might have the potential of revealing the identity of an individual physician. Where appropriate, and when a zero (0) was not relevant, information was suppressed if the cell content was based on counts less than 5.

Appendix B—A Brief Summary of Internal Migration in Canada

Internal migration, movement within a country from one region to another, is a concern for governments, business leaders, researchers and, ultimately, the general population. "Migration is the main mechanism through which regional and local populations adjust to changing economic and social circumstances."[64] As a result, this topic (as well as immigration) has been widely studied in Canada.[65, 66, 67, 68]

In a 2004 publication, *Mobility of Nurses in Canada,*[37] the authors provided background for the internal migration of nurses by summarizing some of the more recent studies on the mobility of the general population of Canada. While this is a very good summary, the emphasis was only on interprovincial migration.[29, 69, 70, 71] Those studies were not designed to examine the equally important component of Canadian mobility and intraprovincial movement. Nor did they focus on urban–rural movement, about which it has been observed that, "Migration is a concern for Rural and Small-Town areas of Canada as rural development is essentially a demographic phenomenon."[31]

As well, the focus of many of these analyses is the migration patterns of the general population. They do not always focus on particular occupations.

To provide a backdrop to the analyses of the internal migration patterns of health care providers in Canada, this appendix summarizes some of those patterns for the aggregated non-health occupations. As will be shown, Canadians make up "a nation on the move."[32]

Migration Composition

The magnitude of the mobility of Canadians in non-health occupations is shown in Table B1. Over 3 million people in this group lived in another location (excluding moves within the same community) five years prior to the respective census years shown. These counts include intraprovincial migrants, interprovincial migrants and external migrants (people who lived outside of Canada). The raw counts shown in that table reflect the observation that, overall, there were fewer migrants recorded in the 1996 Census compared with the 1991 Census; however, the gross numbers of migrants increased by 2001.

Table B1. Total Migrants in the General Canadian Workforce by Province/Territory and Canada, 1991, 1996 and 2001

Province	1991	1996	2001
N.L.	42,895	33,915	34,015
P.E.I.	14,515	12,420	12,620
N.S.	93,195	75,635	72,845
N.B.	66,545	59,070	64,875
Que.	867,610	733,945	819,625
Ont.	1,513,640	1,195,450	1,297,805
Man.	93,450	84,035	88,750
Sask.	96,750	94,640	95,390
Alta.	359,840	340,045	427,985
B.C.	590,170	607,550	511,655
Y.T.	6,465	6,060	4,300
N.W.T.	10,595	10,035	9,025
Canada	3,755,665	3,252,805	3,438,885

Notes:
Sums of the numbers for provinces/territories may not equal the sums for Canada due to Statistics Canada's random rounding.
Migrants include all intraprovincial, interprovincial and international migrants.
2001 Northwest Territories data include Nunavut.

Source: Canadian Census of Population 1991, 1996 and 2001.

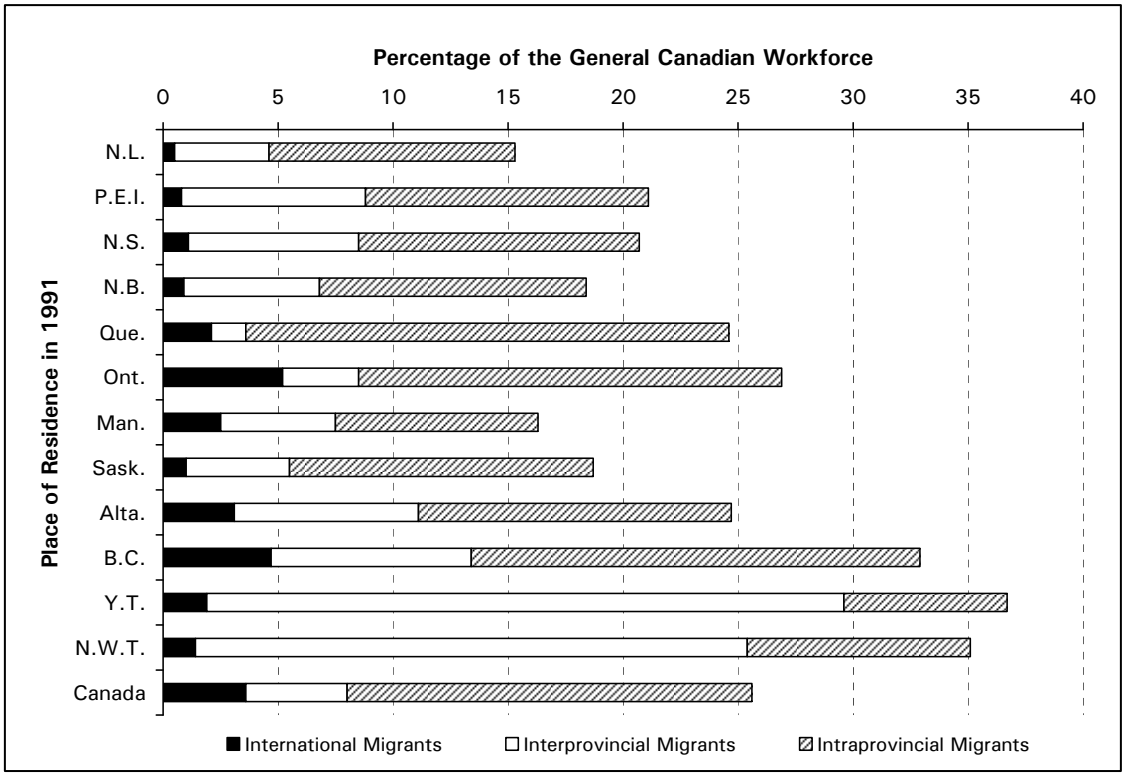
Even though the total number of migrants increased in 2001, it has been observed that the overall proportions of migrants have been decreasing.[29] This is best shown in Figures B1 to B3. These figures show the relative migration composition of people in non-health occupations for each province and territory and for Canada for the 1991 (Figure B1), 1996 (Figure B2) and 2001 (Figure B3) censuses. For each geographical unit shown, proportions of the total population of the non-health occupations have been computed and illustrated for the following: international migrants, interprovincial migrants and intraprovincial migrants.

Overall in Canada in 1991, 25% (3,755,665 people) of non-health workers lived in a different Canadian community or outside the country in 1986 compared to their place of residence in 1991. For the 1991 census year, 4% of the population of non-health workers had lived outside of Canada (international migrants) in 1986. Interprovincial migrants made up 4% of that population, and 18% moved from one community to another as intraprovincial migrants.

The overall proportions of migrants within Canada decreased to 22% and 21% in 1996 and 2001. During those time periods, there was no change in interprovincial proportions. Intraprovincial proportions decreased from 18% in 1991 to 14% in 2001. There was also a decrease in the proportions of international migrants from 1991 to 1996 (4% and 3%, respectively) and no change from 1996 to 2001.

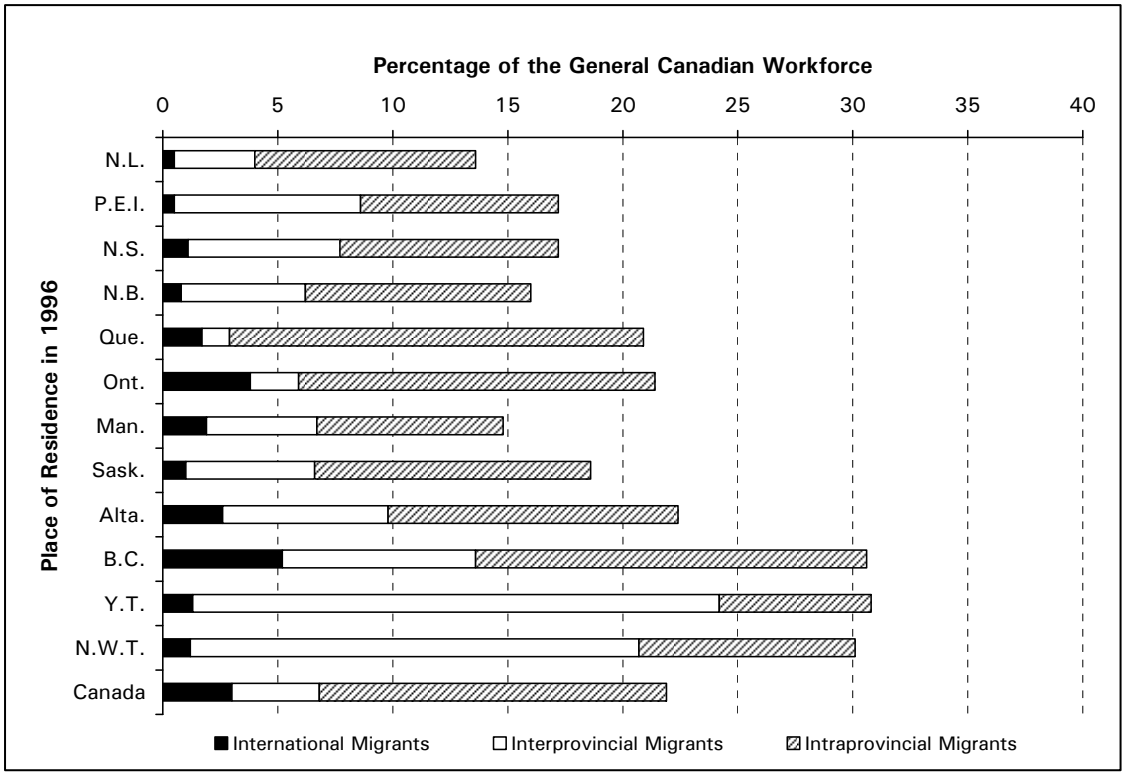
The provincial and territorial variations in these components of migration composition are illustrated in figures B1 to B3.

Figure B1. Percentage Migration Composition (Place of Residence Five Years Ago) for the General Canadian Workforce by Province/Territory and Canada, 1991



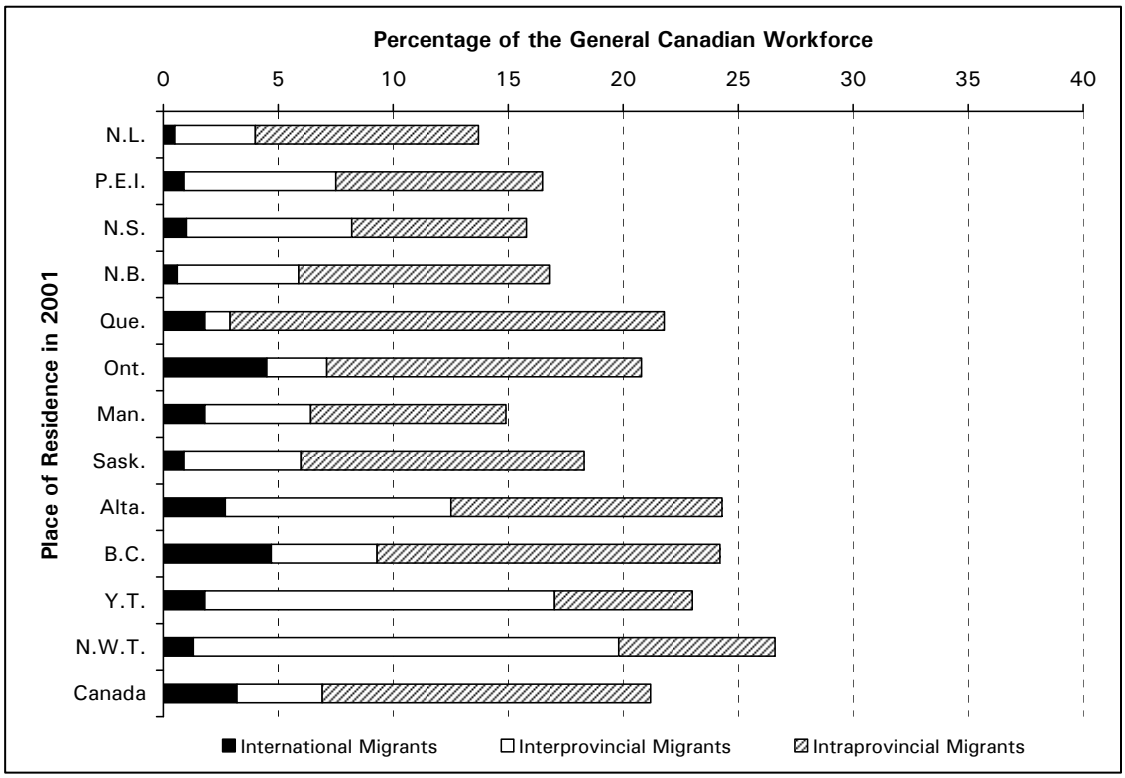
Source: Statistics Canada, Census of Population.

Figure B2. Percentage Migration Composition (Place of Residence Five Years Ago) for the General Canadian Workforce by Province/Territory and Canada, 1996



Source: Statistics Canada, Census of Population.

Figure B3. Percentage Migration Composition (Place of Residence Five Years Ago) for the General Canadian Workforce by Province/Territory and Canada, 2001



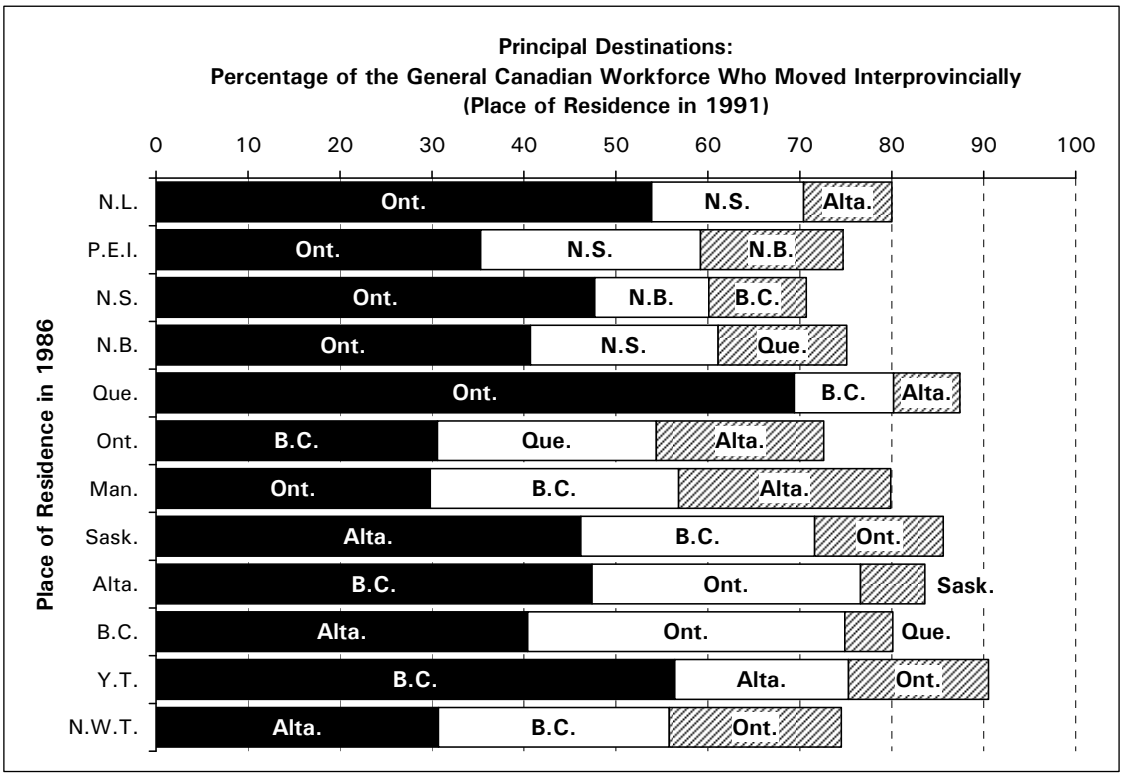
Source: Statistics Canada, Census of Population.

Interprovincial Migration

Figures B4 and B5 illustrate both the source and principal destination regions for non-health occupation interprovincial migrants. The three most common provincial destinations for each province and territory are shown for the 1991 Census (Figure B4) and the 2001 Census (Figure B5). Raw counts for these interprovincial migrations, including all origin and destination provinces and territories, are shown in Table B2. The latter table also includes the origin–destinations of the interprovincial migrants enumerated in 1996.

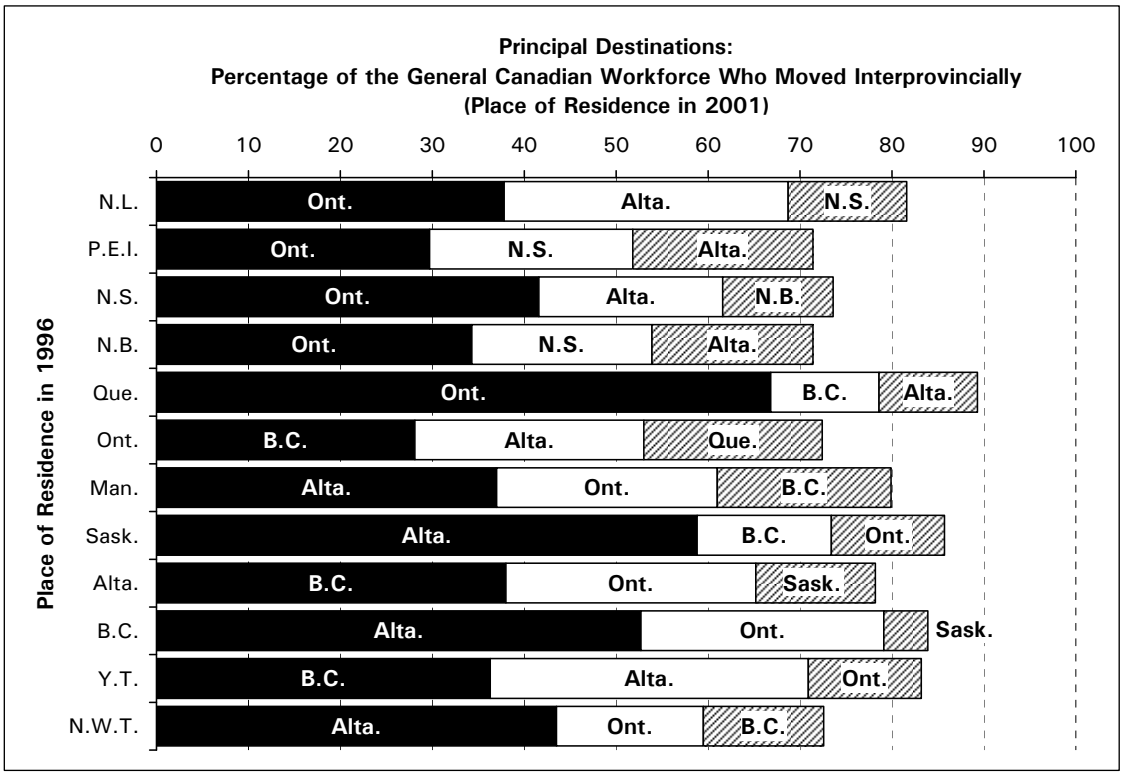
These illustrations support the general observation that interprovincial movement in Canada has tended "to be toward provinces which have been nearby, large, or further west."[72] For example, people in non-health occupations who lived in eastern Canada in 1986, but moved to another province or territory by 1991, most often moved to Ontario. Their next most important destination was a province close by. For example, if migrant Nova Scotians did not choose to relocate in Ontario, they most likely migrated to New Brunswick. B.C. was the prime destination for migrants from Ontario, in both 1991 and 2001. And western Canadians primarily moved to adjacent provinces, although Ontario was an important secondary destination as well.

Figure B4. Principal Destinations: Percentage of the General Canadian Workforce Who Moved Interprovincially, 1991



Source: Statistics Canada, Census of Population.

Figure B5. Principal Destinations: Percentage of the General Canadian Workforce Who Moved Interprovincially, 2001



Notes:
LUC: Larger urban centre.
RST: Rural and small-town.

Source: Statistics Canada, Census of Population.

Although figures B4 and B5 give an indication of the primary destinations, Table B2 highlights the complex interaction between all provinces. Table B2 should be read along with Table B3, which provides provincial and territorial in-, out- and net-migration counts.

Tables B2 and B3 emphasize the observation that when comparing 1996 to 2001 internal migration with earlier interprovincial movement, "We're still heading west, but stopping at the Rockies."[32] As shown in Table B3, most provinces in 1991 had a negative net migration. That is, there were more out-migrants than in-migrants for the period 1986 to 1991. The highest positive net migration in that period was experienced by B.C. That high positive net migration was again recorded in the 1996 Census, but, by 2001, B.C. had experienced a negative net migration. Contrasting that pattern, Alberta saw the 1991 negative net migration replaced by positive net-migration numbers in both 1996 and 2001. In 2001, Alberta had the highest provincial positive net migration.

Table B2. Interprovincial Migration Flows for All People in the General Canadian Workforce: Numbers of Five-Year Interprovincial Migrants by Province/Territory of Residence for Census Years 1991, 1996 and 2001

1986–1991 Migration Flows		Place of Residence in 1986											
		N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.
Place of Residence in 1991	N.L.	0	135	1,925	700	660	5,445	335	135	1,435	720	10	140
	P.E.I.	365	0	1,280	815	320	1,580	165	135	615	195	10	25
	N.S.	4,145	1,595	0	5,815	1,995	12,090	1,125	440	3,435	2,460	20	280
	N.B.	1,140	1,035	4,920	0	3,595	6,655	630	400	1,905	1,090	25	110
	Que.	535	435	2,520	3,980	0	34,720	2,555	1,130	4,295	3,920	80	205
	Ont.	13,525	2,355	18,920	11,590	49,090	0	15,265	9,265	37,455	25,825	590	1,320
	Man.	600	85	905	805	1,290	8,575	0	6,030	6,065	3,745	70	365
	Sask.	155	115	420	375	590	3,875	4,575	0	8,910	3,740	75	365
	Alta.	2,420	485	4,070	2,300	5,085	26,590	11,850	30,535	0	30,275	735	2,170
	B.C.	1,730	360	4,200	1,845	7,640	44,680	13,815	16,760	60,760	0	2,190	1,775
	Y.T.	140	25	125	55	105	580	295	310	1,030	1,920	0	305
	N.W.T.	335	55	385	170	395	1,065	620	890	2,265	970	80	0
1991–1996 Migration Flows		**Place of Residence in 1991**											
		N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.
Place of Residence in 1996	N.L.	0	125	1,705	535	385	4,330	150	160	690	475	10	190
	P.E.I.	600	0	1,360	940	300	1,690	100	50	505	300	0	35
	N.S.	4,050	1,185	0	4,600	2,100	10,935	800	440	2,355	2,315	10	240
	N.B.	1,580	755	4,705	0	2,900	6,540	565	215	1,425	1,070	25	120
	Que.	630	220	2,015	3,275	0	28,795	1,390	645	2,880	3,350	65	270
	Ont.	10,485	1,230	12,865	6,990	38,565	0	8,910	4,215	17,960	16,845	235	830
	Man.	565	145	820	680	1,310	9,355	0	4,515	5,760	3,625	95	215
	Sask.	160	75	490	300	720	4,815	4,285	0	12,045	5,060	190	405
	Alta.	4,865	575	4,585	2,950	4,880	26,915	10,780	22,020	0	29,110	765	1,865
	B.C.	4,005	605	6,820	2,795	12,490	61,005	11,955	10,825	52,755	0	2,030	1,360
	Y.T.	250	15	140	65	135	610	255	280	1,035	1,515	0	210
	N.W.T.	675	30	415	175	315	1,290	410	505	1,925	655	105	0
1996–2001 Migration Flows		**Place of Residence in 1996**											
		N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.
Place of Residence in 2001	N.L.	0	185	1,530	540	505	3,195	190	110	1,245	990	55	225
	P.E.I.	680	0	1,150	760	220	1,410	55	70	390	295	10	40
	N.S.	4,505	1,210	0	5,605	2,035	10,520	1,010	610	3,325	3,910	105	280
	N.B.	1,630	800	4,535	0	3,100	5,945	580	275	1,855	1,560	115	170
	Que.	615	130	1,985	4,095	0	23,905	1,265	640	2,855	5,355	90	225
	Ont.	13,220	1,630	15,735	9,820	50,920	0	9,600	5,620	21,595	31,540	565	1,145
	Man.	545	70	950	675	1,185	8,280	0	4,330	5,755	5,030	100	395
	Sask.	510	60	505	350	590	3,250	4,420	0	10,345	5,770	170	485
	Alta.	10,800	1,075	7,560	5,010	8,195	30,650	14,790	26,950	0	62,860	1,590	3,120
	B.C.	1,650	280	3,350	1,590	8,970	34,565	7,540	6,680	30,160	0	1,665	935
	Y.T.	90	0	85	25	145	445	75	190	430	1,220	0	145
	N.W.T.	715	40	440	165	380	1,055	395	325	1,335	805	125	0

Source: Statistics Canada, Census of Population.

Table B3. General Canadian Workforce: Number of Interprovincial Out-, In- and Net-Migrants by Province and Territory, 1991, 1996 and 2001

	Migration Summaries								
	1991			1996			2001		
	Out	In	Net	Out	In	Net	Out	In	Net
N.L.	25,090	11,640	-13,450	27,865	8,755	-19,110	34,960	8,770	-26,190
P.E.I.	6,680	5,505	-1,175	4,960	5,880	920	5,480	5,080	-400
N.S.	39,670	33,400	-6,270	35,920	29,030	-6,890	37,825	33,115	-4,710
N.B.	28,450	21,505	-6,945	23,305	19,900	-3,405	28,635	20,565	-8,070
Que.	70,765	54,375	-16,390	64,100	43,535	-20,565	76,245	41,160	-35,085
Ont.	145,855	185,200	39,345	156,280	119,130	-37,150	123,220	161,390	38,170
Man.	51,230	28,535	-22,695	39,600	27,085	-12,515	39,920	27,315	-12,605
Sask.	66,030	23,195	-42,835	43,870	28,545	-15,325	45,800	26,455	-19,345
Alta.	128,170	116,515	-11,655	99,335	109,310	9,975	79,290	172,600	93,310
B.C.	74,860	155,755	80,895	64,320	166,645	102,325	119,335	97,385	-21,950
Y.T.	3,885	4,890	1,005	3,530	4,510	980	4,590	2,850	-1,740
N.W.T.	7,060	7,230	170	5,740	6,500	760	7,165	5,780	-1,385

Source: Statistics Canada, Census of Population.

Intraprovincial and Urban–Rural Migration

The rural and small-town net-migration rates for all individuals 15 years of age and over were reported as 0% from 1986 to 1991 and then 1% from 1991 to 1996.[31] The same authors reported that the net-migration rates for larger urban centres for those same years remained unchanged. Significantly, there was virtually no net movement from 1986 to 1991, but rural areas of the country experienced a positive net migration. But these rates were based on the migration movement that included people who were not in the labour force.

Using the same methodology as the study above, the rural–urban migration numbers and rates have been calculated for the aggregate of all Canadians working in non-health occupations (Table B4).

The movement of non-health workers differs from that of the overall population in that from 1986 to 1991, there was a negative net-migration rate (-1%) for rural areas and a positive net-migration rate for urban areas, as a whole. But 1991 to 1996 net-migration patterns were somewhat similar: positive for rural areas and negative for larger urban centres. Although there were numerical differences of some significance between the net-migration rates for men and women, their patterns were similar for both rural and urban areas of the country. Table B4 also shows that there was a return for 1996 to 2001 to a negative net-migration rate for rural areas and a positive rate for urban regions. In both the 1986-to-1991 and the 1996-to-2001 periods for rural areas of the country, the negative net-migration rates for women were greater than the equivalent rates for men. Along the same lines, the positive net migration experienced in rural areas from 1991 to 1996 was higher for men than for women.

Table B4. General Canadian Workforce: Migration Between Larger Urban Centres and Rural and Small-Town (Rural) Areas

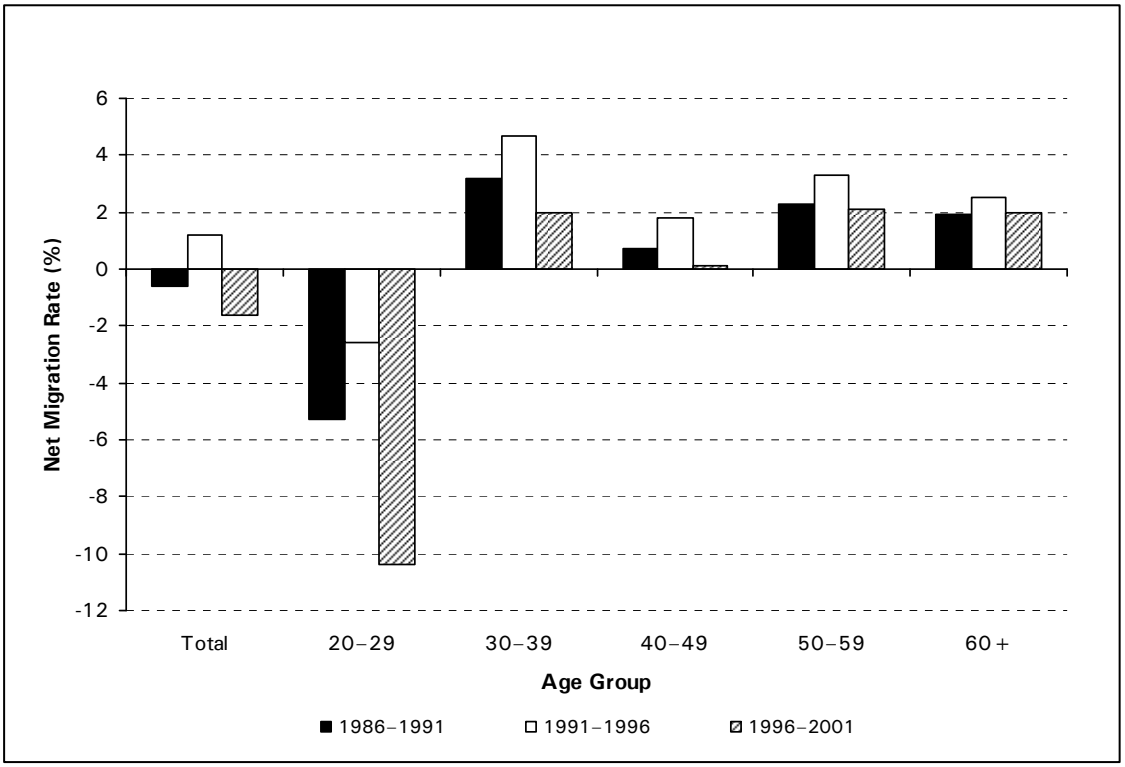
	1986–1991			1991–1996			1996–2001		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
	Number of Non-Movers and Internal Migrants								
Non-movers									
Rural	3,131,960	1,822,910	1,309,050	3,160,255	1,817,850	1,342,405	3,191,250	1,797,295	1,393,960
Urban	11,575,680	6,365,655	5,210,025	11,682,065	6,367,405	5,314,655	13,010,475	6,987,445	6,023,030
Internal migrants									
Rural to urban	423,870	228,600	195,275	340,065	181,720	158,350	414,145	217,275	196,870
Urban to rural	402,075	223,645	178,425	382,005	209,850	172,155	355,075	192,825	162,255
Total net-migration rate to rural areas	-21,795	-4,955	-16,850	41,940	28,130	13,805	-59,070	-24,450	-34,615
	Percentage of Migrants								
Rural									
In-migration rate	11	11	12	11	11	12	10	10	10
Out-migration rate	12	11	13	10	9	11	12	11	12
Net-migration rate	-1	0	-1	1	1	1	-2	-1	-2
Urban									
In-migration rate	4	4	4	3	3	3	3	3	3
Out-migration rate	3	3	3	3	3	3	3	3	3
Net-migration rate	0	0	0	0	0	0	0	0	1

Source: Statistics Canada, Census of Population.

The complexity of urban–rural migration flows is further illustrated upon examination of the net-migration rates for rural areas (Figure B6) by age groupings.[ix] As illustrated, the overall net-migration rates for the 20-to-29 age group are higher than for any other age grouping. This age group shows a negative net-migration rate for all of the census years being examined. All other age groups have a positive net migration with respect to the rural areas of the country. However, especially for the 1986-to-1991 and 1996-to-2001 migration periods, the inflow of people in these older age groups is not sufficient to produce an overall positive net migration. Figure B6 illustrates the exodus of young people in non-health occupations from rural and small-town Canada.

ix. A similar graph of urban net migration by these same age groups and years would appear as a mirror image of the rural patterns illustrated in Figure B6. The only differences would be in the magnitude of the urban net-migration rates, which tend to be smaller because of the dampening effect of larger numbers of urban movers and non-movers.

Figure B6. General Canadian Workforce: Rural and Small-Town Net Migration by Age Group, Canada, 1991, 1996 and 2001



Source: Statistics Canada, Census of Population.

Additional details of the internal migration patterns of non-health workers are shown in Table B5. The table provides an overall summary of interprovincial and intraprovincial migration, as well as movement between rural and urban areas of the country. Three examples illustrate how that table could be read:

- For the 1986-to-1991 movement, 42% of internal migrants who lived in urban areas of Newfoundland and Labrador in 1986 made their way to urban areas outside of the province. This interprovincial urban-to-urban movement was recorded again in 1996 and 2001.
- The predominantly rural-to-urban movement of people in non-health occupations is illustrated by Alberta: for 1986 to 1991, 44% of workers in this group moved from rural to urban areas (within the same province). This proportion of rural to urban intraprovincial movers decreased to 42% by 1996, but increased again to 48% in 2001.
- Not all movement from rural areas is to urban locations. In New Brunswick in the 1986 to 1991 period, other rural areas within the province were the recipients of rural New Brunswick workers (34% in 1991 and 33% in 1996). However, the rural to urban movement became more dominant in New Brunswick by 2001.

Table B5. General Canadian Workforce: Summary of Urban–Rural Migration Flows by Province and Territory for 1991, 1996 and 2001 Census Years

Place of Residence—Five Years Ago	Place of Residence in 1991				Place of Residence in 1996				Place of Residence in 2001			
	Same Jurisdiction		Different Jurisdiction		Same Jurisdiction		Different Jurisdiction		Same Jurisdiction		Different Jurisdiction	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
N.L.												
Urban	38	14	42	6	30	16	45	9	28	11	54	8
Rural	27	29	37	7	23	23	42	12	23	20	48	10
P.E.I.												
Urban	40	10	42	8	30	18	42	10	31	17	43	9
Rural	32	34	26	8	36	32	23	9	35	32	28	5
N.S.												
Urban	43	13	38	6	35	15	42	8	20	17	54	9
Rural	32	30	30	8	35	28	28	9	37	26	28	8
N.B.												
Urban	41	15	39	6	40	19	34	7	38	17	39	6
Rural	30	34	27	9	31	33	27	9	34	32	28	7
Que.												
Urban	78	12	9	1	76	13	9	1	77	12	10	1
Rural	58	38	3	1	56	40	3	1	60	36	3	2
Ont.												
Urban	74	13	11	2	73	12	13	2	76	11	11	2
Rural	51	40	7	3	53	35	8	4	61	30	7	3
Man.												
Urban	15	21	57	8	17	24	51	8	20	22	51	8
Rural	37	32	20	10	39	36	15	10	40	35	18	8
Sask.												
Urban	26	14	51	9	29	20	43	9	30	20	43	8
Rural	39	28	22	11	38	34	18	10	40	31	19	10
Alta.												
Urban	38	16	39	8	41	19	32	8	48	19	27	6
Rural	44	35	14	7	42	39	12	7	48	36	10	6
B.C.												
Urban	72	10	15	3	71	13	13	3	63	9	23	4
Rural	53	30	12	5	49	33	11	7	48	26	19	8
Y.T.												
Urban	0	15	64	22	2	14	59	26	3	7	66	25
Rural	26	14	37	24	33	12	28	27	28	9	40	23
N.W.T.												
Urban	0	12	65	23	0	13	62	26	0	5	73	22
Rural	10	27	38	25	11	38	33	19	13	21	42	24

Source: Statistics Canada, Census of Population.

Appendix C—Physician Workforce—Supplementary Tables

Table C1. Age Distribution (%) and Average Age (Years) of Active Physicians, Canada, 1986 to 2004

Year	<30	30–39	40–49	50–59	60+	Average
1986	5.8	32.3	25.6	20.3	16.0	45.6
1987	6.1	32.6	26.0	19.6	15.7	46.3
1988	6.4	32.4	26.3	19.1	15.7	45.4
1989	6.6	32.2	26.9	18.5	15.7	45.3
1990	6.3	32.3	27.7	18.3	15.3	45.3
1991	6.0	32.1	28.7	18.1	15.0	45.3
1992	5.7	31.7	29.2	18.1	15.3	45.5
1993	5.6	31.0	29.7	18.3	15.3	45.6
1994	4.4	30.4	30.9	19.0	15.3	45.9
1995	3.6	29.3	31.9	19.6	15.6	46.2
1996	3.1	28.4	32.6	20.4	15.4	46.4
1997	2.9	27.1	32.9	21.5	15.7	46.8
1998	2.8	26.3	32.9	22.0	16.0	47.0
1999	2.6	25.6	33.0	22.9	16.0	47.3
2000	2.4	25.0	32.9	23.5	16.2	47.5
2001	2.3	24.6	32.7	24.5	15.8	47.6
2002	2.3	24.2	32.7	25.1	15.8	47.7
2003	1.7	22.7	32.5	26.3	16.8	48.3
2004	1.6	22.2	31.8	26.9	17.5	48.6

Source: SMDB, CIHI.

Table C2. Average Age (Years) of Active Physicians by Province/Territory, 1986 to 2004

Year	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nun.
1986	42.9	48.7	45.5	46.2	44.6	46.4	46.3	46.1	44.7	46.3	41.1	41.2	37.2
1987	44.8	49.4	46.2	46.5	45.3	47.0	47.0	47.3	45.4	46.9	42.5	43.6	42.8
1988	43.0	48.6	45.1	45.7	44.6	45.9	46.2	46.2	44.1	46.0	40.7	42.2	41.0
1989	43.1	48.6	44.8	45.0	45.0	45.7	45.5	46.5	44.3	45.8	40.4	40.2	44.1
1990	43.5	49.0	45.2	44.9	44.9	45.6	45.5	46.5	44.2	45.7	40.4	41.4	41.4
1991	43.9	48.6	45.0	44.8	45.0	45.6	45.2	46.6	44.1	45.5	40.5	40.9	44.6
1992	44.3	47.8	45.2	45.1	45.3	45.8	45.3	46.6	44.4	45.4	42.1	40.8	40.6
1993	44.1	48.5	45.0	45.2	45.6	46.0	45.2	46.6	44.4	45.3	42.6	41.3	44.3
1994	44.4	47.0	45.7	45.3	46.0	46.4	45.4	46.4	44.5	45.6	43.2	40.1	45.3
1995	44.8	47.6	46.0	45.5	46.3	46.7	45.5	46.9	45.1	46.0	44.0	41.4	48.4
1996	45.1	48.1	46.2	45.8	46.4	47.0	45.9	47.3	45.4	46.1	43.9	41.8	39.3
1997	45.5	48.6	46.4	46.2	46.7	47.4	46.1	47.7	45.7	46.4	43.5	42.6	39.7
1998	45.8	48.8	46.6	46.3	46.9	47.7	46.5	47.8	45.9	46.8	45.9	42.9	44.3
1999	46.1	48.8	46.8	46.6	47.1	47.9	46.8	47.6	45.9	47.1	47.1	42.8	40.3
2000	46.1	49.5	47.1	47.1	47.4	48.1	46.8	48.0	46.5	47.3	47.4	44.8	43.0
2001	46.2	48.8	47.4	46.7	47.6	48.1	46.9	48.0	46.4	47.6	46.7	44.5	47.4
2002	46.3	49.2	47.5	47.0	47.2	48.5	47.4	48.2	46.0	47.9	47.0	44.3	42.8
2003	46.7	49.1	48.1	47.1	48.3	48.9	48.2	48.6	46.4	48.3	45.9	43.3	46.2
2004	47.2	48.9	48.2	47.0	48.4	49.2	48.4	48.6	46.7	49.1	48.6	43.5	46.7

Source: SMDB, CIHI.

Table C3. Age Distribution (%) and Average Age (Years) of Non-Migrant (Internal Migration) Active Physicians by One-Year and Five-Year Migration Periods

Migration Period	<30	30–39	40–49	50–59	60+	Average
1-Year Migration Period						
1986–1987	4.8	31.6	26.8	21.4	15.4	45.8
1987–1988	4.7	31.7	27.3	20.7	15.6	45.8
1988–1989	5.2	31.7	27.6	20.1	15.3	45.6
1989–1990	5.1	31.6	28.7	19.8	14.8	45.5
1990–1991	4.9	31.7	29.3	19.5	14.5	45.5
1991–1992	4.7	30.9	30.3	19.2	14.8	45.7
1992–1993	4.6	30.9	30.5	19.1	15.0	45.8
1993–1994	4.3	30.3	31.2	19.4	14.8	45.9
1994–1995	3.7	29.5	32.1	19.8	14.8	46.1
1995–1996	3.0	28.5	33.4	20.6	14.5	46.3
1996–1997	2.6	27.5	33.7	21.3	14.9	46.6
1997–1998	2.4	26.0	34.0	22.3	15.3	47.0
1998–1999	2.3	25.2	34.0	23.0	15.5	47.2
1999–2000	1.9	24.5	34.0	24.0	15.6	47.5
2000–2001	2.0	23.9	34.2	24.6	15.3	47.6
2001–2002	1.8	23.5	33.9	25.8	14.9	47.7
2002–2003	2.0	23.2	33.4	25.9	15.5	47.9
2003–2004	1.4	21.6	33.3	27.4	16.3	48.5
5–Year Migration Period						
1986–1991	4.2	32.8	29.7	22.7	10.6	44.9
1991–1996	3.9	31.8	33.6	20.5	10.3	44.8
1996–2001	2.0	27.1	37.0	22.9	11.1	46.0

Source: SMDB, CIHI.

Table C4. Age Distribution (%) and Average Age (Years) of Active Physicians Who Were Internal Migrants by One-Year and Five-Year Migration Periods

Migration Period	<30	30–39	40–49	50–59	60+	Average
1–Year Migration Period						
1986–1987	18.1	48.4	16.5	9.5	7.6	38.6
1987–1988	18.5	46.7	17.8	9.2	7.8	38.7
1988–1989	21.5	47.2	16.2	8.5	6.6	37.9
1989–1990	21.2	46.7	17.1	8.1	7.0	38.0
1990–1991	21.1	46.7	17.9	8.0	6.2	37.9
1991–1992	16.1	45.6	19.0	10.5	8.7	39.8
1992–1993	19.1	46.3	18.2	8.8	7.6	38.7
1993–1994	18.8	46.0	20.1	8.4	6.8	38.6
1994–1995	14.8	48.4	19.3	9.5	8.0	39.3
1995–1996	11.8	46.5	20.9	10.2	10.6	40.7
1996–1997	11.7	45.9	21.8	10.7	9.9	40.8
1997–1998	8.7	41.0	26.3	13.7	10.2	42.2
1998–1999	10.6	43.4	26.0	12.2	7.8	40.9
1999–2000	11.0	44.3	25.6	11.3	7.7	40.5
2000–2001	8.2	43.5	26.0	13.6	8.6	41.7
2001–2002	8.7	43.4	26.4	13.3	8.2	41.4
2002–2003	7.7	41.5	27.6	15.7	7.5	41.9
2003–2004	5.4	38.4	28.1	16.2	11.8	43.7
5-Year Migration Period						
1986–1991	15.2	46.4	20.5	12.0	6.0	39.2
1991–1996	16.0	44.7	21.1	10.9	7.3	39.5
1996–2001	8.3	42.9	27.6	13.7	7.6	41.4

Source: SMDB, CIHI.

Table C5. Age Distribution (%) and Average Age (Years) of Active Physicians Who Were Interprovincial Migrants by One-Year and Five-Year Migration Periods

Migration Period	<30	30–39	40–49	50–59	60+	Average
1–Year Migration Period						
1986–1987	20.7	52.3	12.5	10.0	4.6	37.2
1987–1988	18.2	54.6	15.7	7.1	4.4	37.1
1988–1989	21.9	52.2	13.1	8.3	4.5	36.7
1989–1990	21.4	51.8	15.9	6.7	4.2	36.5
1990–1991	21.3	52.0	15.8	7.0	4.0	36.5
1991–1992	22.2	52.5	14.1	7.6	3.6	36.6
1992–1993	21.4	53.5	16.2	5.6	3.3	36.2
1993–1994	21.5	49.5	19.9	5.9	3.2	36.6
1994–1995	18.0	51.5	18.8	7.0	4.7	37.3
1995–1996	15.4	54.3	17.0	8.8	4.4	37.7
1996–1997	14.8	51.4	20.3	8.7	4.7	38.1
1997–1998	9.2	54.7	22.0	9.8	4.3	38.8
1998–1999	9.2	49.3	27.0	10.3	4.2	39.3
1999–2000	10.7	48.3	25.8	10.2	5.0	39.4
2000–2001	8.1	50.2	25.4	11.7	4.7	39.8
2001–2002	9.1	52.4	24.0	10.1	4.3	39.1
2002–2003	9.2	50.5	24.2	13.2	2.8	39.3
2003–2004	7.1	49.0	25.8	14.0	4.1	40.0
5–Year Migration Period						
1986–1991	15.8	52.2	18.8	9.8	3.4	37.8
1991–1996	18.8	51.2	18.8	8.4	2.7	37.1
1996–2001	9.4	49.2	26.5	11.0	3.9	39.4

Source: SMDB, CIHI.

Table C6. Age Distribution (%) and Average Age (Years) of Active Physicians Who Were Intraprovincial Migrants by One-Year and Five-Year Migration Periods

Migration Period	<30	30–39	40–49	50–59	60+	Average
1–Year Migration Period						
1986–1987	17.3	47.3	17.7	9.3	8.5	39.0
1987–1988	18.5	44.2	18.5	9.8	8.9	39.2
1988–1989	21.3	45.3	17.3	8.6	7.4	38.4
1989–1990	21.1	44.9	17.5	8.6	8.0	38.5
1990–1991	21.0	44.9	18.7	8.4	7.0	38.4
1991–1992	14.7	43.9	20.2	11.3	9.9	40.6
1992–1993	18.3	43.8	18.9	9.9	9.1	39.5
1993–1994	18.1	45.0	20.1	9.1	7.8	39.1
1994–1995	13.9	47.5	19.4	10.3	9.0	39.9
1995–1996	10.9	44.4	21.9	10.5	12.3	41.5
1996–1997	10.7	44.2	22.3	11.3	11.4	41.6
1997–1998	8.6	37.8	27.3	14.7	11.6	43.0
1998–1999	11.0	41.6	25.7	12.8	8.9	41.4
1999–2000	11.1	43.3	25.6	11.6	8.4	40.8
2000–2001	8.3	41.3	26.2	14.3	9.9	42.3
2001–2002	8.5	40.7	27.2	14.2	9.4	42.2
2002–2003	7.0	37.9	29.0	16.7	9.4	43.0
2003–2004	5.0	35.9	28.7	16.7	13.7	44.6
5–Year Migration Period						
1986–1991	15.0	44.5	21.0	12.7	6.8	39.6
1991–1996	15.3	42.9	21.7	11.6	8.5	40.2
1996–2001	7.9	41.0	27.9	14.4	8.7	42.0

Source: SMDB, CIHI.

Table C7. Logistic Regression Odds Ratios (Including 95% Confidence Intervals) for the Variable "Sex" (0 = Male, 1 = Female) as a Factor in Determining the Probability of Internal Migration for Canada's Active Physicians, by One-Year Migration Period, 1986–1987 to 2003–2004

One-Year Migration Period	All Internal Migration			Interprovincial Migration			Intraprovincial Migration		
	Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals	
		Lower	Upper		Lower	Upper		Lower	Upper
1986–1987	1.12	1.02	1.23	1.02	0.84	1.22	1.16	1.04	1.28
1987–1988	1.09	0.99	1.19	1.07	0.90	1.27	1.10	0.99	1.22
1988–1989	1.17	1.07	1.28	1.03	0.87	1.21	1.23	1.12	1.36
1989–1990	1.04	0.96	1.14	1.00	0.86	1.17	1.07	0.97	1.18
1990–1991	1.05	0.97	1.15	0.94	0.80	1.11	1.10	0.99	1.21
1991–1992	0.98	0.91	1.06	0.93	0.80	1.09	1.00	0.92	1.09
1992–1993	1.10	1.02	1.20	0.97	0.83	1.13	1.17	1.06	1.28
1993–1994	0.99	0.91	1.07	0.89	0.75	1.05	1.02	0.94	1.12
1994–1995	1.06	0.97	1.16	1.09	0.92	1.29	1.06	0.96	1.17
1995–1996	1.03	0.95	1.12	0.96	0.81	1.15	1.06	0.97	1.16
1996–1997	0.98	0.90	1.07	0.87	0.73	1.04	1.03	0.93	1.13
1997–1998	0.99	0.92	1.07	0.97	0.82	1.14	1.00	0.92	1.09
1998–1999	1.02	0.94	1.10	0.87	0.74	1.02	1.07	0.98	1.17
1999–2000	1.01	0.94	1.09	0.96	0.82	1.13	1.03	0.95	1.12
2000–2001	1.02	0.94	1.10	1.04	0.90	1.20	1.02	0.93	1.11
2001–2002	1.07	1.00	1.15	1.01	0.87	1.17	1.10	1.02	1.20
2002–2003	1.09	1.00	1.20	0.91	0.77	1.08	1.18	1.06	1.31
2003–2004	1.03	0.96	1.11	0.93	0.79	1.09	1.07	0.99	1.16

Note: Odds ratio values are adjusted odds ratios based on multivariate logistic regression analyses.

Source: SMDB, CIHI.

Table C8. Logistic Regression Odds Ratios (Including 95% Confidence Intervals) for the Variable "Language" (0 = English, 1 = French) as a Factor in Determining the Probability of Internal Migration for Canada's Active Physicians, by One-Year Migration Period, 1986–1987 to 2003–2004

One-Year Migration Period	All Internal Migration			Interprovincial Migration			Intraprovincial Migration		
	Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals	
		Lower	Upper		Lower	Upper		Lower	Upper
1986–1987	1.50	1.38	1.64	0.34	0.27	0.44	2.00	1.83	2.20
1987–1988	1.55	1.42	1.69	0.35	0.27	0.45	2.11	1.92	2.31
1988–1989	1.04	0.95	1.13	0.29	0.23	0.37	1.39	1.26	1.53
1989–1990	1.32	1.22	1.44	0.30	0.24	0.39	1.81	1.65	1.98
1990–1991	1.31	1.20	1.42	0.29	0.23	0.37	1.80	1.65	1.98
1991–1992	1.22	1.13	1.32	0.31	0.24	0.39	1.51	1.39	1.64
1992–1993	1.13	1.04	1.23	0.21	0.16	0.28	1.54	1.40	1.68
1993–1994	1.03	0.95	1.12	0.22	0.16	0.29	1.31	1.20	1.44
1994–1995	1.33	1.22	1.45	0.25	0.18	0.34	1.77	1.61	1.95
1995–1996	1.39	1.28	1.51	0.28	0.21	0.37	1.81	1.65	1.97
1996–1997	1.34	1.23	1.47	0.25	0.19	0.33	1.84	1.67	2.02
1997–1998	1.22	1.13	1.31	0.33	0.25	0.42	1.48	1.36	1.61
1998–1999	1.38	1.27	1.50	0.36	0.28	0.46	1.79	1.64	1.95
1999–2000	1.36	1.26	1.47	0.36	0.28	0.46	1.71	1.57	1.85
2000–2001	1.10	1.01	1.19	0.37	0.29	0.46	1.38	1.27	1.51
2001–2002	1.32	1.22	1.43	0.36	0.29	0.45	1.69	1.56	1.84
2002–2003	0.43	0.38	0.49	0.25	0.19	0.34	0.50	0.44	0.58
2003–2004	2.21	2.06	2.38	0.45	0.36	0.57	2.85	2.63	3.08

Note: Odds Ratio values are adjusted odds ratios based on multivariate logistic regression analyses.

Source: SMDB, CIHI.

Table C9. Logistic Regression Odds Ratios (Including 95% Confidence Intervals) for the Variable "Broad Specialty Group" (0 = Family Physician/General Practitioner, 1 = Specialist) as a Factor in Determining the Probability of Internal Migration for Canada's Active Physicians, by One-Year Migration Period, 1986–1987 to 2003–2004

One-Year Migration Period	All Internal Migration			Interprovincial Migration			Intraprovincial Migration		
	Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals	
		Lower	Upper		Lower	Upper		Lower	Upper
1986–1987	1.24	1.14	1.35	1.86	1.56	2.22	1.11	1.01	1.22
1987–1988	1.26	1.16	1.37	1.34	1.13	1.58	1.23	1.12	1.36
1988–1989	1.16	1.07	1.27	1.62	1.38	1.90	1.03	0.93	1.14
1989–1990	1.09	1.01	1.18	1.30	1.11	1.52	1.03	0.94	1.13
1990–1991	1.11	1.02	1.20	1.37	1.17	1.61	1.03	0.94	1.13
1991–1992	0.85	0.79	0.92	1.13	0.96	1.33	0.80	0.73	0.86
1992–1993	0.97	0.89	1.05	1.10	0.94	1.29	0.92	0.84	1.01
1993–1994	0.93	0.86	1.01	1.19	1.01	1.41	0.87	0.80	0.95
1994–1995	0.98	0.90	1.07	1.45	1.22	1.73	0.88	0.80	0.97
1995–1996	0.98	0.91	1.06	1.42	1.20	1.69	0.89	0.81	0.97
1996–1997	0.92	0.85	1.00	1.51	1.27	1.79	0.79	0.72	0.87
1997–1998	0.94	0.88	1.02	1.65	1.40	1.93	0.82	0.75	0.89
1998–1999	1.13	1.05	1.22	1.76	1.51	2.05	0.98	0.90	1.07
1999–2000	0.87	0.81	0.94	1.49	1.27	1.75	0.75	0.69	0.82
2000–2001	1.15	1.07	1.24	1.69	1.46	1.95	1.02	0.94	1.11
2001–2002	0.94	0.88	1.01	1.46	1.26	1.70	0.83	0.76	0.90
2002–2003	0.92	0.84	1.01	1.27	1.08	1.51	0.81	0.73	0.90
2003–2004	0.94	0.88	1.01	1.24	1.06	1.46	0.89	0.82	0.96

Note: Odds Ratio values are adjusted odds ratios based on multivariate logistic regression analyses.

Source: SMDB, CIHI.

Table C10. Logistic Regression Odds Ratios (Including 95% Confidence Intervals) for the Variable "Place of Graduation" (0 = Graduate of Canadian Medical School, 1 = Graduate of Foreign Medical School) as a Factor in Determining the Probability of Internal Migration for Canada's Active Physicians, by One-Year Migration Period, 1986–1987 to 2003–2004

One-Year Migration Period	All Internal Migration			Interprovincial Migration			Intraprovincial Migration		
	Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals	
		Lower	Upper		Lower	Upper		Lower	Upper
1986–1987	1.20	1.08	1.32	1.33	1.11	1.61	1.16	1.03	1.30
1987–1988	1.31	1.18	1.44	1.59	1.33	1.90	1.21	1.08	1.36
1988–1989	1.29	1.17	1.43	1.61	1.35	1.91	1.18	1.05	1.32
1989–1990	1.22	1.11	1.35	1.52	1.28	1.80	1.12	1.00	1.26
1990–1991	1.27	1.15	1.41	1.35	1.13	1.61	1.25	1.12	1.41
1991–1992	1.16	1.07	1.26	1.56	1.30	1.85	1.09	0.99	1.20
1992–1993	1.28	1.16	1.40	1.78	1.50	2.11	1.13	1.00	1.26
1993–1994	1.21	1.10	1.33	1.52	1.27	1.82	1.13	1.02	1.26
1994–1995	1.31	1.18	1.45	1.49	1.22	1.81	1.26	1.12	1.42
1995–1996	1.22	1.10	1.35	1.55	1.27	1.88	1.14	1.02	1.28
1996–1997	1.24	1.12	1.37	1.28	1.05	1.57	1.24	1.10	1.40
1997–1998	1.17	1.07	1.28	1.75	1.47	2.09	1.06	0.96	1.17
1998–1999	1.28	1.16	1.41	1.80	1.52	2.14	1.12	1.00	1.25
1999–2000	1.21	1.10	1.33	1.89	1.59	2.25	1.01	0.91	1.14
2000–2001	1.42	1.30	1.55	2.13	1.82	2.50	1.21	1.09	1.35
2001–2002	1.36	1.24	1.48	1.90	1.61	2.24	1.20	1.08	1.34
2002–2003	1.51	1.36	1.67	2.24	1.87	2.68	1.28	1.13	1.45
2003–2004	1.27	1.15	1.39	1.78	1.48	2.13	1.15	1.03	1.27

Note: Odds Ratio values are adjusted odds ratios based on multivariate logistic regression analyses.

Source: SMDB, CIHI.

Table C11. Logistic Regression Odds Ratios (Including 95% Confidence Intervals) for the Variable "Urban–Rural Location in First Year of Migration Period" (0 = Urban, 1 = Rural and Small-Town) as a Factor in Determining the Probability of Internal Migration for Canada's Active Physicians, by One-Year Migration Period, 1986–1987 to 2003–2004

One-Year Migration Period	All Internal Migration			Interprovincial Migration			Intraprovincial Migration		
	Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals		Odds Ratio	95% Confidence Intervals	
		Lower	Upper		Lower	Upper		Lower	Upper
1986–1987	1.58	1.41	1.77	2.08	1.66	2.59	1.46	1.29	1.66
1987–1988	1.57	1.41	1.76	1.46	1.16	1.83	1.60	1.41	1.81
1988–1989	1.61	1.44	1.80	1.65	1.33	2.05	1.58	1.39	1.79
1989–1990	1.30	1.16	1.45	1.58	1.28	1.95	1.20	1.06	1.37
1990–1991	1.70	1.52	1.90	2.04	1.66	2.50	1.59	1.40	1.80
1991–1992	2.84	2.61	3.10	2.03	1.66	2.49	3.00	2.74	3.29
1992–1993	1.71	1.54	1.90	1.88	1.54	2.29	1.65	1.46	1.85
1993–1994	1.66	1.50	1.84	1.57	1.26	1.95	1.66	1.48	1.86
1994–1995	1.64	1.47	1.84	1.71	1.35	2.16	1.62	1.43	1.83
1995–1996	1.51	1.35	1.68	1.60	1.26	2.03	1.49	1.32	1.67
1996–1997	1.59	1.42	1.78	1.55	1.21	1.97	1.60	1.41	1.81
1997–1998	3.96	3.64	4.30	2.29	1.84	2.85	4.28	3.92	4.68
1998–1999	1.50	1.34	1.67	1.36	1.07	1.73	1.52	1.34	1.71
1999–2000	1.51	1.36	1.67	2.17	1.76	2.67	1.35	1.20	1.52
2000–2001	1.59	1.43	1.77	1.85	1.51	2.27	1.50	1.34	1.69
2001–2002	1.71	1.55	1.89	2.00	1.63	2.45	1.62	1.45	1.81
2002–2003	1.96	1.74	2.21	1.96	1.57	2.45	1.94	1.69	2.23
2003–2004	1.54	1.39	1.70	1.92	1.55	2.38	1.44	1.29	1.61

Note: Odds Ratio values are adjusted odds ratios based on multivariate logistic regression analyses.

Source: SMDB, CIHI.

Table C12. Numbers of Interprovincial Migrant Physicians by Province and Territory of Residence for the 1996-to-2001 Migration Period

		Province/Territory of Residence in 1996											
		N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.
Province/Territory of Residence in 2001	N.L.	0	0	*	*	*	14	6	*	*	*	0	0
	P.E.I.	*	0	7	0	*	9	*	0	*	*	0	0
	N.S.	26	*	0	19	7	65	9	*	13	21	0	*
	N.B.	5	*	15	0	20	8	*	*	*	9	0	0
	Que.	0	0	8	17	0	61	*	0	*	7	0	*
	Ont.	92	*	58	39	203	0	69	49	73	94	*	5
	Man.	7	0	5	*	8	29	0	*	5	18	0	*
	Sask.	*	0	*	*	*	15	*	0	13	9	0	0
	Alta.	20	0	12	6	13	100	41	114	0	70	*	10
	B.C.	18	*	28	9	34	165	50	58	116	0	*	6
	Y.T.	*	0	0	0	0	*	0	0	*	*	0	0
	N.W.T.	0	0	*	0	*	*	*	0	*	*	*	0

Note: * Number suppressed due to small cell size, but indicates that migration occurred.

Source: SMDB, CIHI.

Table C13. Top Three Destinations, by Percentage, for Physicians Who Moved Interprovincially by Province and Territory of Origin, for One-Year and Five-Year Migration Periods

Migration Period	Province and Territory of Origin of Interprovincial Migrant Physicians											
	N.L.			P.E.I.			N.S.			N.B.		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
1-Year												
1986–1987	Ont.	N.S.	Man.	N.S.			Ont.	B.C.	N.S.	Ont.	Que.	B.C.
	54.4	11.8	10.3				42.0	16.0	12.0	50.0	19.2	
1987–1988	Ont.	N.S.	Que.	Ont.	N.S.	N.B.	Ont.	B.C.	N.L.	Ont.	Que.	N.S.
	41.5	22.6					49.1	12.3	10.5	36.8	26.3	
1988–1989	Ont.	N.S.	N.B.	Ont.	N.B.	N.S.	Ont.	B.C.	N.B.	Que.	Ont.	B.C.
	47.4	15.8					32.1	19.6	12.5	33.3	30.6	16.7
1989–1990	Ont.	N.B.	N.S.	B.C.	Ont.		Ont.	B.C.	N.B.	Que.	Ont.	N.S.
	37.7	11.3	9.4				34.8	23.2	10.1	37.8	24.3	13.5
1990–1991	Ont.	N.S.	B.C.	Ont.	B.C.	Alta.	Ont.	B.C.	Alta.	Ont.	N.S.	Que.
	48.1	14.8	11.1				41.3	23.8	12.7	41.2	17.6	14.7
1991–1992	Ont.	B.C.	N.S.	N.S.			Ont.	B.C.	N.L.	Ont.	Que.	N.S.
	30.6	24.5	16.3				37.0	31.5	9.3	38.2	32.4	
1992–1993	Ont.	B.C.	Sask.	Que.	B.C.		Ont.	B.C.	N.B.	N.S.	Que.	Ont.
	37.0	19.6	10.9				34.6	25.0	17.3	34.4	34.4	25.0
1993–1994	Ont.	N.S.	N.B.	Ont.	N.B.	N.S.	Ont.	B.C.	N.B.	Ont.	Que.	N.S.
	34.6	13.5	13.5				30.4	29.0	17.4	34.8	30.4	
1994–1995	Ont.	N.S.	B.C.	N.B.	Ont.	N.S.	Ont.	N.B.	B.C.	Que.	Ont.	Alta.
	40.0	17.5	12.5				43.2	25.0	18.2	26.1	26.1	
1995–1996	Ont.	B.C.	N.S.	Ont.	N.S.		Ont.	B.C.	N.B.	Ont.	N.S.	Que.
	36.8	34.2	13.2				37.2	20.9	18.6	38.5	23.1	19.2
1996–1997	N.S.	Ont.	Alta.	B.C.	N.B.	N.S.	Ont.	B.C.	N.B.	Ont.	B.C.	Que.
	39.5	25.6	14.0				30.0	20.0	15.0	38.5		
1997–1998	Ont.	N.S.	Alta.	Sask.			Ont.	B.C.	N.B.	Que.	N.S.	Ont.
	48.3	19.0	8.6				34.8	28.3	10.9	25.0	21.4	17.9
1998–1999	Ont.	N.S.	Man.	Ont.			Ont.	N.B.	Alta.	Ont.	N.S.	Que.
	49.1	17.0	11.3				56.9	10.8	10.8	39.4	21.2	18.2
1999–2000	Ont.	N.S.	B.C.	N.S.	Ont.		Ont.	B.C.	N.B.	Que.	Ont.	N.S.
	52.5	19.7	11.5				57.6	16.7	7.6	28.1	28.1	18.8
2000–2001	Ont.	N.S.	B.C.	N.B.	N.S.	B.C.	Ont.	N.B.	N.L.	Ont.	N.S.	Que.
	56.7	14.9	11.9				49.4	11.1	9.9	42.4	27.3	21.2
2001–2002	Ont.	N.S.	Alta.	B.C.	Alta.	N.S.	Ont.	Alta.	B.C.	Que.	Ont.	N.S.
	38.1	15.9	14.3				29.6	19.7	18.3	40.0	26.7	
2002–2003	Ont.	Alta.	N.S.	Ont.	N.S.	N.B.	Ont.	B.C.	N.L.	N.S.	Ont.	N.L.
	56.0	18.0	12.0				34.7	16.3	12.2	29.4		
2003–2004	Ont.	N.S.	Alta.	Ont.	N.S.	Man.	Ont.	N.B.	Alta.	Que.	Ont.	N.S.
	45.7	23.9	15.2				51.1	13.3	13.3	28.0	28.0	24.0
5-Year												
1986–1991	Ont.	N.S.	B.C.	Ont.	N.S.	N.B.	Ont.	B.C.	N.B.	Ont.	Que.	B.C.
	50.0	11.8	11.2	45.5			42.7	16.1	12.9	40.3	20.8	12.5
1991–1996	Ont.	B.C.	N.S.	Ont.	N.S.	Que.	Ont.	B.C.	N.B.	Ont.	Que.	N.S.
	37.8	19.3	12.6				38.2	27.9	12.5	37.2	26.9	17.9
1996–2001	Ont.	N.S.	Alta.	N.S.	N.B.	Ont.	Ont.	B.C.	N.B.	Ont.	N.S.	Que.
	53.8	15.2	11.7				42.0	20.3	10.9	39.8	19.4	17.3

(table continued on next page)

Table C13. Top Three Destinations, by Percentage, for Physicians Who Moved Interprovincially by Province and Territory of Origin, for One-Year and Five-Year Migration Periods (cont'd)

Migration Period	Province and Territory of Origin of Interprovincial Migrant Physicians											
	Que.			Ont.			Man.			Sask.		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
1-Year												
1986–1987	Ont.	N.B.	B.C.	Que.	B.C.	Alta.	Ont.	B.C.	Alta.	Ont.	B.C.	Alta.
	59.2	15.5	9.9	28.8	20.9	16.6	45.5	24.2	12.1	39.7	23.8	14.3
1987–1988	Ont.	N.B.	B.C.	Que.	B.C.	Alta.	Ont.	B.C.	Alta.	B.C.	Ont.	Alta.
	47.9	19.8	14.6	24.9	23.2	14.1	51.3	23.7	17.1	29.8	26.3	22.8
1988–1989	Ont.	B.C.	N.B.	B.C.	Alta.	Que.	Ont.	B.C.	Que.	Ont.	B.C.	Alta.
	67.7	11.8	7.5	31.9	18.6	17.6	50.0	26.2	6.2	36.4	31.8	21.2
1989–1990	Ont.	N.B.	Alta.	B.C.	Que.	Alta.	Ont.	B.C.	Alta.	B.C.	Ont.	Alta.
	69.4	8.2	8.2	31.9	22.4	13.4	37.7	33.8	16.9	38.2	33.8	19.1
1990–1991	Ont.	B.C.	N.B.	B.C.	Que.	Alta.	Ont.	B.C.	Alta.	B.C.	Ont.	Alta.
	67.4	10.9	10.1	37.4	19.8	17.6	42.9	32.1		29.3	27.6	22.4
1991–1992	Ont.	B.C.	N.B.	B.C.	Que.	Alta.	Ont.	B.C.	Alta.	B.C.	Alta.	Ont.
	67.0	20.2	6.4	31.3	23.5	17.1	39.5	34.6	14.8	38.8	32.9	20.0
1992–1993	Ont.	N.B.	B.C.	B.C.	Que.	Alta.	B.C.	Ont.	Alta.	B.C.	Ont.	Alta.
	64.6	10.1	8.9	31.0	26.7	17.3	50.0	32.5	10.0	43.3	24.4	23.3
1993–1994	Ont.	B.C.	Alta.	B.C.	Que.	Alta.	Ont.	B.C.	Sask.	B.C.	Alta.	Ont.
	74.7	10.3		33.0	21.8	13.4	32.1	32.1	10.7	36.2	34.0	19.1
1994–1995	Ont.	B.C.	N.B.	B.C.	Que.	Alta.	B.C.	Ont.	Sask.	B.C.	Ont.	Alta.
	64.0	12.0	10.7	28.0	23.6	14.0	35.6	31.1	11.1	38.2	32.7	12.7
1995–1996	Ont.	N.B.	B.C.	B.C.	Que.	Alta.	B.C.	Ont.	N.S.	B.C.	Alta.	Ont.
	64.8	11.4	10.2	30.9	21.5	14.9	45.1	21.6	11.8	48.3	36.7	11.7
1996–1997	Ont.	B.C.	N.B.	B.C.	Alta.	Que.	Ont.	B.C.	Alta.	Alta.	B.C.	Ont.
	56.0	15.6	9.2	33.9	19.0	16.1	38.5	32.7	11.5	34.4	32.8	23.4
1997–1998	Ont.	N.B.	B.C.	B.C.	Que.	Alta.	Alta.	Ont.	B.C.	Alta.	B.C.	Ont.
	67.3	11.2	8.2	27.9	17.3	17.3	35.8	23.9	23.9	54.0	28.6	9.5
1998–1999	Ont.	N.B.	B.C.	B.C.	Alta.	Que.	Ont.	B.C.	Alta.	Alta.	Ont.	B.C.
	63.9	13.9	8.2	24.4	19.6	18.5	37.8	31.1	18.9	40.0	31.4	15.7
1999–2000	Ont.	B.C.	N.B.	B.C.	Que.	N.S.	Ont.	Alta.	B.C.	Alta.	Ont.	B.C.
	79.8	7.1	5.1	34.6	19.5	13.8	35.8	24.5	18.9	40.5	27.0	21.6
2000–2001	Ont.	N.B.	B.C.	B.C.	Que.	Alta.	Ont.	B.C.	Alta.	Alta.	Ont.	B.C.
	71.1	12.3	8.8	32.1	24.1	18.9	33.3	24.6	17.4	47.7	23.9	23.9
2001–2002	Ont.	Alta.	N.B.	B.C.	Que.	Alta.	Alta.	Ont.	B.C.	Alta.	Ont.	B.C.
	60.6	14.9	7.4	26.7	24.0	22.7	35.3	30.6	22.4	43.1	33.3	20.8
2002–2003	Ont.	B.C.	N.B.	B.C.	Alta.	Que.	B.C.	Ont.	Alta.	Alta.	B.C.	Ont.
	68.0	9.3	8.0	35.8	21.6	14.2	35.6	27.1	22.0	38.5	32.3	24.6
2003–2004	Ont.	Alta.	B.C.	Que.	B.C.	Alta.	Ont.	Alta.	B.C.	Ont.	B.C.	Alta.
	79.0	8.6	6.2	27.3	26.4	16.7	46.3	27.8	16.7	34.4	29.5	26.2
5-Year												
1986–1991	Ont.	B.C.	N.B.	B.C.	Que.	Alta.	Ont.	B.C.	Alta.	Ont.	B.C.	Alta.
	65.9	11.5	10.6	31.9	20.6	16.4	50.0	27.9	12.1	40.5	24.4	16.8
1991–1996	Ont.	B.C.	N.B.	B.C.	Que.	Alta.	B.C.	Ont.	Alta.	B.C.	Alta.	Ont.
	65.3	15.3	7.4	38.8	19.6	15.1	42.8	31.1	12.2	42.3	25.8	23.1
1996–2001	Ont.	B.C.	N.B.	B.C.	Alta.	N.S.	Ont.	B.C.	Alta.	Alta.	B.C.	Ont.
	68.6	11.5	6.8	35.1	21.3	13.8	37.3	27.0	22.2	49.1	25.0	21.1

(table continued on next page)

Table C13. Top Three Destinations, by Percentage, for Physicians Who Moved Interprovincially by Province and Territory of Origin, for One-Year and Five-Year Migration Periods (cont'd)

Migration Period	Province and Territory of Origin of Interprovincial Migrant Physicians											
	Alta.			B.C.			Y.T.			N.W.T. and Nun.		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
1-Year												
1986–1987	B.C.	Ont.	Man.	Ont.	Alta.	Sask.				Ont.	B.C.	N.S.
	50.0	32.5		36.0	30.7	14.7						
1987–1988	B.C.	Ont.	N.L.	Ont.	Alta.	Sask.	B.C.	N.W.T.		Ont.	Alta.	Que.
	46.5	29.1	5.8	38.3	30.9	7.4				41.7		
1988–1989	B.C.	Ont.	Que.	Ont.	Alta.	Sask.	B.C.			Ont.	Que.	Man.
	56.9	22.0	8.1	40.0	25.6	8.9						
1989–1990	B.C.	Ont.	Sask.	Alta.	Ont.	Man.	B.C.	Ont.		B.C.	Ont.	Alta.
	53.4	23.3	10.7	38.2	36.3	6.9						
1990–1991	B.C.	Ont.	Sask.	Ont.	Alta.	N.S.	B.C.	Ont.	Alta.	B.C.	Ont.	Alta.
	49.4	25.8	6.7	44.7	24.7	8.2						
1991–1992	B.C.	Ont.	Sask.	Ont.	Alta.	N.S.	B.C.			B.C.	Ont.	Man.
	61.4	20.5	6.8	35.8	27.2	11.1						
1992–1993	B.C.	Ont.	Sask.	Alta.	Ont.	N.W.T.	B.C.	Ont.		Ont.	Alta.	Man.
	52.5	23.8	9.9	37.3	32.0	8.0						
1993–1994	B.C.	Ont.	Sask.	Ont.	Alta.	Man.	Alta.			Ont.	Alta.	B.C.
	47.4	23.7	8.8	35.1	28.8	9.9						
1994–1995	B.C.	Ont.	Sask.	Ont.	Alta.	N.S.				Alta.	B.C.	
	45.2	27.9	9.6	34.6	30.8	10.3				62.5		
1995–1996	B.C.	Ont.	Sask.	Ont.	Alta.	Sask.	Ont.			B.C.	Que.	Alta.
	46.0	26.0	9.0	43.3	31.7							
1996–1997	B.C.	Ont.	Sask.	Ont.	Alta.	N.S.	Alta.			B.C.	Man.	N.S.
	52.8	20.8	8.3	32.1	30.9	11.1						
1997–1998	B.C.	Ont.	Sask.	Ont.	Alta.	N.S.	B.C.	Ont.		Alta.	Ont.	Man.
	47.4	37.9	8.4	37.5	26.1	11.4				60.0		
1998–1999	Ont.	B.C.	Sask.	Ont.	Alta.	Man.	B.C.	Ont.	N.W.T.	Ont.	Alta.	B.C.
	42.0	34.6	7.4	38.4	31.3	7.1				55.6		
1999–2000	B.C.	Ont.	N.S.	Ont.	Alta.	Man.	Alta.			Ont.	Alta.	B.C.
	53.8	28.8	7.5	43.7	20.4	16.5				41.6		
2000–2001	B.C.	Ont.	N.S.	Ont.	Alta.	N.S.	B.C.	Alta.		Ont.	Alta.	B.C.
	49.5	27.5	4.6	43.4	28.3	6.6						
2001–2002	B.C.	Ont.	Man.	Alta.	Ont.	N.S.	Ont.	Alta.	N.S.	B.C.	Alta.	Man.
	41.5	30.5	8.5	36.9	35.1	6.3						
2002–2003	B.C.	Ont.	Sask.	Ont.	Alta.	N.S.	B.C.	Ont.		Ont.	Man.	B.C.
	45.8	30.8	11.2	36.5	36.5	5.9				63.6		
2003–2004	Ont.	B.C.	Sask.	Ont.	Alta.	N.S.	Ont.	B.C.	N.W.T.	Ont.	Que.	Alta.
	45.2	26.9	5.4	37.5	34.1	8.0				71.4		
5-Year												
1986–1991	B.C.	Ont.	Sask.	Ont.	Alta.	Sask.	Alta.	B.C.		Ont.	B.C.	Alta.
	52.8	27.1	5.0	37.6	28.0	8.0				33.3	27.8	
1991–1996	B.C.	Ont.	Que.	Ont.	Alta.	N.S.	B.C.	N.B.	N.S.	Ont.	Alta.	B.C.
	57.3	22.2	5.3	36.6	32.4	6.9				33.3		
1996–2001	B.C.	Ont.	N.S.	Ont.	Alta.	N.S.	B.C.	Ont.	N.S.	Alta.	B.C.	Ont.
	49.4	31.1	5.5	39.5	29.4	8.8				35.7	21.4	

Notes:
Proportions are expressed as the percentages of all interprovincial out-migrants from the respective origin provinces.
Percentages are suppressed if the number of physicians (that is, the numerator) were less than five. Destination provinces/territories are shown, even when percentages are suppressed, to indicate that migration did occur.

Source: SMDB, CIHI.

Table C14. Active Physicians: Number of Interprovincial Out-, In-, and Net-Migrants by Province and Territory for One-Year and Five-Year Migration Periods

Migration Period	N.L.			P.E.I.			N.S.			N.B.		
	Out	In	Net	Out	In	Net	Out	In	Net	Out	In	Net
1-Year												
1986–1987	68	18	-50	*	*	3	50	41	-9	26	33	7
1987–1988	53	42	-11	*	*	0	57	47	-10	19	44	25
1988–1989	38	29	-9	7	5	-2	56	46	-10	36	33	-3
1989–1990	53	18	-35	*	*	3	69	45	-24	37	31	-6
1990–1991	54	19	-35	*	*	1	63	49	-14	34	42	8
1991–1992	49	15	-34	*	*	4	54	45	-9	34	30	-4
1992–1993	46	22	-24	*	*	3	52	43	-9	32	27	-5
1993–1994	52	17	-35	*	*	6	69	33	-36	23	45	22
1994–1995	40	14	-26	*	*	0	44	36	-8	23	38	15
1995–1996	38	15	-23	*	*	0	43	49	6	26	33	7
1996–1997	43	16	-27	*	*	1	40	65	25	13	23	10
1997–1998	58	20	-38	*	*	6	46	59	13	28	29	1
1998–1999	53	16	-37	*	*	10	65	68	3	33	37	4
1999–2000	61	16	-45	*	*	-3	66	63	-3	32	22	-10
2000–2001	67	28	-39	*	*	6	81	59	-22	33	40	7
2001–2002	63	15	-48	9	9	0	71	57	-14	30	33	3
2002–2003	50	21	-29	*	*	2	49	44	-5	17	20	3
2003–2004	46	19	-27	7	14	7	45	49	4	25	19	-6
5-Year												
1986–1991	152	22	-130	11	15	4	124	98	-26	72	80	8
1991–1996	135	36	-99	8	17	9	136	104	-32	78	89	11
1996–2001	171	37	-134	9	27	18	138	168	30	98	67	-31

(table continued on next page)

Table C14. Active Physicians: Number of Interprovincial Out-, In- and Net-Migrants by Province and Territory for One-Year and Five-Year Migration Periods (cont'd)

Migration Period	Que.			Ont.			Man.			Sask.		
	Out	In	Net	Out	In	Net	Out	In	Net	Out	In	Net
1-Year												
1986–1987	71	71	0	163	224	61	66	35	-31	63	32	-31
1987–1988	96	66	-30	177	219	42	76	23	-53	57	23	-34
1988–1989	93	75	-18	204	243	39	80	31	-49	66	28	-38
1989–1990	98	85	-13	232	238	6	77	44	-33	68	38	-30
1990–1991	129	57	-72	222	259	37	56	32	-24	58	26	-32
1991–1992	109	79	-30	217	218	1	81	38	-43	85	21	-64
1992–1993	79	94	15	255	194	-61	80	31	-49	90	33	-57
1993–1994	87	61	-26	179	208	29	56	39	-17	47	43	-4
1994–1995	75	56	-19	157	178	21	45	31	-14	55	41	-14
1995–1996	88	50	-38	181	169	-12	51	26	-25	60	26	-34
1996–1997	109	38	-71	168	165	-3	52	29	-23	64	28	-36
1997–1998	98	46	-52	179	208	29	67	24	-43	63	40	-23
1998–1999	122	46	-76	168	283	115	74	31	-43	70	27	-43
1999–2000	99	52	-47	159	272	113	53	42	-11	74	22	-52
2000–2001	114	76	-38	212	297	85	69	24	-45	88	21	-67
2001–2002	94	80	-14	225	228	3	85	31	-54	72	25	-47
2002–2003	75	33	-42	148	206	58	59	25	-34	65	20	-45
2003–2004	81	75	-6	216	246	30	54	31	-23	61	21	-40
5-Year												
1986–1991	208	122	-86	354	560	206	190	60	-130	131	57	-74
1991–1996	216	150	-66	490	482	-8	180	61	-119	182	50	-132
1996–2001	296	100	-196	470	685	215	185	81	-104	232	50	-182

(table continued on next page)

Table C14. Active Physicians: Number of Interprovincial Out-, In- and Net-Migrants by Province and Territory for One-Year and Five-Year Migration Periods (cont'd)

Migration Period	Alta.			B.C.			Y.T.			N.W.T. and Nun.		
	Out	In	Net	Out	In	Net	Out	In	Net	Out	In	Net
1-Year												
1986–1987	80	71	-9	75	134	59	0	*	*	8	6	-2
1987–1988	86	94	8	81	144	63	*	*	3	12	9	-3
1988–1989	123	91	-32	90	211	121	*	*	3	9	7	-2
1989–1990	103	117	14	102	218	116	*	*	-1	7	10	3
1990–1991	89	96	7	85	207	122	*	*	-1	7	10	3
1991–1992	88	108	20	81	239	158	*	*	2	6	5	-1
1992–1993	101	120	19	75	244	169	*	*	2	12	9	-3
1993–1994	114	91	-23	111	186	75	*	*	3	6	12	6
1994–1995	104	71	-33	78	155	77	0	*	*	8	7	-1
1995–1996	100	86	-14	60	190	130	*	*	3	7	7	0
1996–1997	72	104	32	81	171	90	*	*	1	8	9	1
1997–1998	95	133	38	88	164	76	*	*	-4	10	7	-3
1998–1999	81	123	42	99	129	30	*	*	-4	9	8	-1
1999–2000	80	95	15	103	156	53	*	0	*	*	*	-10
2000–2001	109	146	37	106	189	83	*	*	2	14	5	-9
2001–2002	82	195	113	111	162	51	*	*	-3	*	*	10
2002–2003	107	120	13	85	168	83	*	*	-3	11	10	-1
2003–2004	93	122	29	88	118	30	*	*	-3	7	12	5
5-Year												
1986–1991	218	183	-35	125	390	265	*	*	5	18	11	-7
1991–1996	225	226	1	145	577	432	*	*	6	15	12	-3
1996–2001	235	387	152	238	489	251	*	*	-2	28	11	-17

Note: An asterisk (*) is used to indicate that interprovincial migration did occur, but the number of either out- or in-migrant physicians ranged from 1 to 4 and have been suppressed.

Source: SMDB, CIHI.

Table C15. Number of Active Physicians per 100,000 Population by Province, Territory and Canada, 1986 to 2004

Year	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T.	N.W.T.	Nun.	N.W.T. and Nun.	Canada
1986	146	135	172	118	187	178	168	138	150	191	119			80	174
1987	151	140	180	122	193	183	169	142	157	194	125			84	179
1988	161	144	187	128	198	189	166	146	165	199	132			77	185
1989	169	138	194	131	198	194	174	149	166	200	140			79	188
1990	161	135	192	132	200	191	175	149	165	197	140			78	187
1991	157	134	192	135	201	192	180	150	168	198	132	108	36	82	188
1992	153	132	191	137	204	193	178	148	168	200	126	122	57	98	189
1993	167	136	201	141	207	194	180	149	172	203	129	131	38	96	192
1994	168	133	191	143	209	190	176	153	168	197	141	136	33	97	189
1995	166	131	187	147	210	186	175	150	164	194	145	135	28	95	188
1996	165	125	187	149	210	182	174	144	161	194	150	132	23	91	186
1997	169	121	189	150	210	180	177	145	159	193	157	144	23	98	185
1998	172	129	196	153	212	180	177	150	164	195	145	135	27	92	186
1999	173	132	200	155	213	180	179	155	168	195	133	130	41	95	187
2000	176	130	203	154	214	181	182	156	167	197	135	116	26	79	188
2001	181	139	202	157	215	181	182	155	169	199	179	91	25	64	189
2002	179	140	208	158	212	180	180	157	181	200	173	111	35	80	189
2003	188	142	209	163	207	177	178	154	184	201	180	102	34	74	188
2004	192	152	214	168	214	178	178	154	186	197	196	119	24	80	190

Source: SMDB, CIHI.

Table C16a. Impact on Physician-to-Population Ratios by Type of Migration and Migration Period, Newfoundland and Labrador and P.E.I., 1986–1987 to 2003–2004

	Newfoundland and Labrador							P.E.I.						
		Contributions to Physician-to-Population Ratios by:							Contributions to Physician-to-Population Ratios by:					
Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period
1-Year														
1986–1987	146.1	13.7	-8.7	0.0	-8.7	5.0	151.4	134.7	3.1	2.3	0.0	2.3	5.4	140.0
1987–1988	151.4	12.0	-1.9	-0.5	-2.4	9.6	161.0	140.0	3.9	0.0	0.8	0.8	4.6	143.9
1988–1989	161.0	9.5	-1.6	-0.2	-1.7	7.8	168.5	143.9	-3.1	-1.5	0.0	-1.5	-4.6	138.4
1989–1990	168.5	0.0	-6.1	-1.0	-7.1	-7.1	160.9	138.4	-6.1	2.3	0.8	3.1	-3.1	134.8
1990–1991	160.9	2.8	-6.0	-0.3	-6.4	-3.6	156.9	134.8	0.0	0.8	-2.3	-1.5	-1.5	133.5
1991–1992	156.9	3.6	-5.9	-1.0	-6.9	-3.3	153.4	133.5	-3.8	3.1	0.0	3.1	-0.8	132.3
1992–1993	153.4	18.6	-4.1	-0.9	-5.0	13.6	167.1	132.3	0.8	2.3	1.5	3.8	4.5	135.5
1993–1994	167.1	8.2	-6.1	-2.4	-8.5	-0.3	168.3	135.5	-7.5	4.5	1.5	6.0	-1.5	132.7
1994–1995	168.3	1.1	-4.6	-1.2	-5.8	-4.8	165.7	132.7	0.0	0.0	-0.7	-0.7	-0.7	130.9
1995–1996	165.7	2.5	-4.1	-1.3	-5.4	-2.9	165.1	130.9	-3.7	0.0	-0.7	-0.7	-4.4	125.2
1996–1997	165.1	6.5	-4.9	-0.4	-5.3	1.3	169.0	125.2	-3.7	0.7	-0.7	0.0	-3.7	121.2
1997–1998	169.0	7.8	-7.0	-1.7	-8.7	-0.9	171.5	121.2	3.7	4.4	-0.7	3.7	7.4	128.8
1998–1999	171.5	7.1	-6.9	-0.4	-7.3	-0.2	173.4	128.8	-2.2	7.3	-1.5	5.9	3.7	132.1
1999–2000	173.4	9.1	-8.5	-0.2	-8.7	0.4	175.6	132.1	0.7	-2.2	0.0	-2.2	-1.5	130.4
2000–2001	175.6	11.1	-7.5	-0.2	-7.7	3.4	181.0	130.4	3.7	4.4	0.7	5.1	8.8	139.0
2001–2002	181.0	6.5	-9.2	-0.4	-9.6	-3.1	178.8	139.0	0.7	0.0	0.0	0.0	0.7	139.5
2002–2003	178.8	14.9	-5.6	-0.4	-6.0	8.9	188.1	139.5	1.5	1.5	0.0	1.5	2.9	142.1
2003–2004	188.1	7.9	-5.2	0.6	-4.6	3.3	191.9	142.1	5.8	5.1	0.0	5.1	10.9	152.3

Source: SMDB, CIHI.

Table C16b. Impact on Physician-to-Population Ratios by Type of Migration and Migration Period, Nova Scotia and New Brunswick, 1986–1987 to 2003–2004

	Nova Scotia							New Brunswick						
		Contributions to Physician-to-Population Ratios by:							Contributions to Physician-to-Population Ratios by:					
Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period
1-Year														
1986–1987	172.2	9.7	-1.0	0.1	-0.9	8.8	180.2	117.5	4.1	1.0	0.1	1.1	5.2	122.3
1987–1988	180.2	7.8	-1.1	0.4	-0.7	7.1	186.5	122.3	2.6	3.4	-0.3	3.1	5.8	127.6
1988–1989	186.5	11.2	-1.1	-1.4	-2.5	8.6	193.8	127.6	4.5	-0.4	0.5	0.1	4.6	131.4
1989–1990	193.8	2.7	-2.6	-0.8	-3.4	-0.7	191.9	131.4	2.0	-0.8	-0.1	-0.9	1.1	131.6
1990–1991	191.9	3.6	-1.5	-0.8	-2.3	1.3	192.1	131.6	4.8	1.1	-1.5	-0.4	4.4	135.1
1991–1992	192.1	3.2	-1.0	-2.3	-3.3	-0.1	191.1	135.1	2.4	-0.5	0.0	-0.5	1.9	136.5
1992–1993	191.1	14.4	-1.0	-2.7	-3.7	10.7	200.9	136.5	5.7	-0.7	-0.7	-1.3	4.4	140.8
1993–1994	200.9	-3.1	-3.9	-1.9	-5.8	-9.0	191.3	140.8	0.9	2.9	-1.2	1.7	2.7	143.2
1994–1995	191.3	1.0	-0.9	-4.6	-5.5	-4.5	186.5	143.2	3.3	2.0	-0.9	1.1	4.4	147.4
1995–1996	186.5	4.7	0.6	-4.0	-3.3	1.4	187.2	147.4	2.0	0.9	-1.1	-0.1	1.9	149.0
1996–1997	187.2	1.1	2.7	-1.7	1.0	2.0	189.1	149.0	1.1	1.3	-1.7	-0.4	0.7	149.6
1997–1998	189.1	6.8	1.4	-1.2	0.2	7.0	196.2	149.6	4.0	0.1	-0.8	-0.7	3.3	153.4
1998–1999	196.2	5.1	0.3	-1.2	-0.9	4.3	200.0	153.4	0.9	0.5	0.0	0.5	1.5	154.8
1999–2000	200.0	3.9	-0.3	-0.3	-0.6	3.2	203.2	154.8	0.5	-1.3	-0.4	-1.7	-1.2	153.6
2000–2001	203.2	0.9	-2.4	0.1	-2.3	-1.4	202.2	153.6	2.9	0.9	-0.4	0.5	3.5	157.2
2001–2002	202.2	8.2	-1.5	-0.5	-2.0	6.2	207.9	157.2	1.3	0.4	-0.9	-0.5	0.8	157.9
2002–2003	207.9	2.7	-0.5	-0.5	-1.1	1.6	209.2	157.9	4.4	0.4	0.4	0.8	5.2	163.0
2003–2004	209.2	3.3	0.4	0.7	1.2	4.5	213.5	163.0	5.6	-0.8	0.3	-0.5	5.1	168.0

Source: SMDB, CIHI.

Table C16c. Impact Physician-to-Population Ratios by Type of Migration and Migration Period, Quebec and Ontario, 1986–1987 to 2003–2004

	Quebec							Ontario						
		Contributions to Physician-to-Population Ratios by:							Contributions to Physician-to-Population Ratios by:					
Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period
1-Year														
1986–1987	186.6	8.9	0.0	-0.1	-0.1	8.8	193.3	178.1	8.1	0.6	0.1	0.7	8.9	183.2
1987–1988	193.3	6.9	-0.4	-0.1	-0.6	6.3	198.0	183.2	9.3	0.4	0.0	0.5	9.8	189.3
1988–1989	198.0	3.2	-0.3	-0.4	-0.6	2.6	198.0	189.3	9.3	0.4	-0.5	-0.1	9.1	193.5
1989–1990	198.0	4.1	-0.2	-0.4	-0.6	3.6	199.5	193.5	2.3	0.1	-0.8	-0.8	1.6	191.4
1990–1991	199.5	5.0	-1.0	-0.6	-1.6	3.5	201.2	191.4	3.7	0.4	-1.1	-0.7	3.0	192.1
1991–1992	201.2	5.5	-0.4	-0.8	-1.2	4.2	204.2	192.1	5.0	0.0	-1.5	-1.5	3.5	193.0
1992–1993	204.2	4.7	0.2	-0.5	-0.3	4.3	207.2	193.0	5.1	-0.6	-1.3	-1.9	3.2	194.0
1993–1994	207.2	3.1	-0.4	-0.3	-0.6	2.5	208.6	194.0	-0.3	0.3	-1.9	-1.7	-2.0	189.7
1994–1995	208.6	2.8	-0.3	-0.5	-0.8	2.0	209.9	189.7	0.2	0.2	-1.4	-1.2	-1.1	186.4
1995–1996	209.9	2.2	-0.5	-0.5	-1.1	1.1	210.2	186.4	-0.3	-0.1	-1.4	-1.5	-1.8	182.4
1996–1997	210.2	2.7	-1.0	-0.7	-1.7	1.0	210.4	182.4	1.2	0.0	-1.4	-1.4	-0.1	179.8
1997–1998	210.4	3.5	-0.7	-0.5	-1.2	2.3	212.0	179.8	2.8	0.3	-0.7	-0.5	2.3	180.0
1998–1999	212.0	3.1	-1.0	-0.5	-1.6	1.5	212.8	180.0	1.8	1.0	-0.8	0.2	2.1	179.9
1999–2000	212.8	3.6	-0.6	-0.4	-1.0	2.5	214.3	179.9	3.2	1.0	-0.1	0.8	4.1	181.2
2000–2001	214.3	2.2	-0.5	-0.4	-0.9	1.3	214.5	181.2	2.7	0.7	-0.9	-0.2	2.6	180.6
2001–2002	214.5	-0.3	-0.2	-0.4	-0.6	-0.9	212.2	180.6	2.7	0.0	-0.7	-0.6	2.1	179.6
2002–2003	212.2	-2.8	-0.6	-0.4	-1.0	-3.7	207.1	179.6	-0.5	0.5	0.0	0.5	0.0	177.3
2003–2004	207.1	7.7	-0.1	0.6	0.6	8.3	214.0	177.3	2.3	0.2	0.2	0.4	2.7	178.1

Source: SMDB, CIHI.

Table C16d. Impact on Physician-to-Population Ratios by Type of Migration and Migration Period, Manitoba and Saskatchewan, 1986–1987 to 2003–2004

	Manitoba							Saskatchewan						
		Contributions to Physician-to-Population Ratios by:							Contributions to Physician-to-Population Ratios by:					
Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period
1-Year														
1986–1987	168.4	5.6	-2.8	-1.0	-3.8	1.8	169.2	137.5	8.2	-3.0	-0.2	-3.2	5.0	142.0
1987–1988	169.2	2.2	-4.8	-0.5	-5.3	-3.1	165.5	142.0	7.2	-3.3	-0.2	-3.5	3.7	146.4
1988–1989	165.5	12.6	-4.4	0.5	-4.0	8.6	173.9	146.4	6.1	-3.7	-1.2	-4.9	1.2	148.8
1989–1990	173.9	5.1	-3.0	-0.3	-3.3	1.8	175.4	148.8	2.8	-3.0	-1.1	-4.1	-1.3	149.3
1990–1991	175.4	7.3	-2.2	-0.4	-2.5	4.8	179.5	149.3	3.7	-3.2	-0.9	-4.1	-0.4	149.6
1991–1992	179.5	6.1	-3.9	-3.1	-7.0	-0.9	178.1	149.6	7.0	-6.4	-2.2	-8.6	-1.6	147.8
1992–1993	178.1	8.1	-4.4	-1.5	-5.9	2.2	179.6	147.8	8.7	-5.7	-1.8	-7.4	1.3	148.7
1993–1994	179.6	0.6	-1.5	-2.1	-3.7	-3.0	175.7	148.7	7.1	-0.4	-2.4	-2.8	4.4	152.6
1994–1995	175.7	3.9	-1.2	-2.2	-3.5	0.4	175.2	152.6	2.7	-1.4	-3.0	-4.3	-1.7	150.3
1995–1996	175.2	4.0	-2.2	-2.6	-4.8	-0.9	173.5	150.3	2.7	-3.3	-4.5	-7.9	-5.1	144.4
1996–1997	173.5	7.4	-2.0	-1.8	-3.9	3.5	176.7	144.4	5.0	-3.5	-1.5	-5.0	0.0	144.6
1997–1998	176.7	6.3	-3.8	-2.0	-5.8	0.5	177.1	144.6	7.1	-2.3	0.7	-1.6	5.5	150.2
1998–1999	177.1	7.3	-3.8	-0.4	-4.2	3.1	179.3	150.2	8.6	-4.2	-0.4	-4.6	3.9	154.5
1999–2000	179.3	4.3	-1.0	-0.4	-1.4	2.9	181.5	154.5	6.3	-5.2	-1.2	-6.4	-0.1	155.5
2000–2001	181.5	5.7	-3.9	-0.9	-4.8	1.0	181.8	155.5	7.0	-6.7	-2.1	-8.8	-1.8	154.9
2001–2002	181.8	5.6	-4.7	-2.3	-7.0	-1.4	179.7	154.9	7.4	-4.7	-1.2	-5.9	1.5	157.0
2002–2003	179.7	3.4	-2.9	-1.7	-4.6	-1.2	177.6	157.0	1.2	-4.5	-0.5	-5.0	-3.8	153.5
2003–2004	177.6	3.5	-2.0	-0.3	-2.2	1.3	177.6	153.5	4.5	-4.0	-0.2	-4.2	0.3	153.6

Source: SMDB, CIHI.

Table C16e. Impact on Physician-to-Population Ratios by Type of Migration and Migration Period, Alberta and British Columbia, 1986–1987 to 2003–2004

	Alberta							British Columbia						
		Contributions to Physician-to-Population Ratios by:							Contributions to Physician-to-Population Ratios by:					
Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period
1-Year														
1986–1987	149.7	8.2	-0.4	-0.2	-0.6	7.6	156.9	190.5	4.2	1.9	-0.3	1.7	5.9	149.7
1987–1988	156.9	9.2	0.3	-0.4	0.0	9.2	164.9	193.5	6.6	2.0	0.5	2.5	9.1	156.9
1988–1989	164.9	5.6	-1.3	-0.5	-1.8	3.8	166.1	198.6	2.6	3.8	0.0	3.8	6.3	164.9
1989–1990	166.1	1.8	0.5	-0.1	0.4	2.2	164.9	199.9	-0.2	3.5	-1.0	2.6	2.3	166.1
1990–1991	164.9	5.6	0.3	-0.4	-0.1	5.4	167.5	196.5	2.3	3.6	-0.2	3.4	5.8	164.9
1991–1992	167.5	4.5	0.8	-2.0	-1.3	3.2	168.1	197.5	3.8	4.6	-0.4	4.1	8.0	167.5
1992–1993	168.1	5.6	0.7	-0.7	0.0	5.5	171.5	200.0	4.3	4.7	-0.8	3.9	8.2	168.1
1993–1994	171.5	0.7	-0.9	-0.9	-1.8	-1.1	168.3	202.7	0.1	2.0	-1.4	0.6	0.7	171.5
1994–1995	168.3	1.0	-1.2	-2.2	-3.4	-2.3	163.9	197.4	0.6	2.0	-0.4	1.6	2.2	168.3
1995–1996	163.9	2.7	-0.5	-2.7	-3.2	-0.5	161.0	194.3	1.6	3.4	-0.7	2.6	4.2	163.9
1996–1997	161.0	2.2	1.1	-1.8	-0.7	1.4	159.3	193.6	1.3	2.3	-0.7	1.6	2.9	161.0
1997–1998	159.3	7.1	1.3	0.1	1.4	8.5	164.0	192.9	2.0	1.9	-0.7	1.2	3.2	159.3
1998–1999	164.0	5.8	1.4	-0.2	1.2	7.0	168.0	194.5	1.8	0.7	-0.9	-0.1	1.6	164.0
1999–2000	168.0	1.7	0.5	-0.4	0.1	1.7	166.9	194.7	3.0	1.3	-1.1	0.2	3.2	168.0
2000–2001	166.9	3.9	1.2	-0.5	0.7	4.6	168.6	196.6	3.0	2.0	-1.0	1.0	4.0	166.9
2001–2002	168.6	11.9	3.6	0.0	3.6	15.5	180.9	198.7	3.0	1.2	-0.9	0.4	3.4	168.6
2002–2003	180.9	4.8	0.4	-0.1	0.3	5.2	183.7	200.3	0.5	2.0	0.0	2.0	2.5	180.9
2003–2004	183.7	3.3	0.9	0.5	1.4	4.7	185.9	201.0	-2.7	0.7	-0.2	0.5	-2.2	183.7

Source: SMDB, CIHI.

Table C16f. Impact on Physician-to-Population Ratios by Type of Migration and Migration Period, Yukon Territory and Northwest Territories, 1986–1987 to 2003–2004

	Yukon Territory							Northwest Territories						
		Contributions to Physician-to-Population Ratios by:							Contributions to Physician-to-Population Ratios by:					
Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period
1-Year														
1986–1987	118.5	7.8	7.8	-3.9	3.9	11.7	124.5	71.3	5.5	-5.5	1.8	-3.6	1.8	72.7
1987–1988	124.5	0.0	11.3	0.0	11.3	11.3	131.5	72.7	-1.8	-9.0	0.0	-9.0	-10.8	61.1
1988–1989	131.5	3.7	11.1	-3.7	7.4	11.1	140.2	61.1	10.5	-1.8	-1.8	-3.5	7.0	66.6
1989–1990	140.2	3.6	-3.6	3.6	0.0	3.6	140.4	66.6	-3.4	3.4	0.0	3.4	0.0	64.5
1990–1991	140.4	3.5	-3.5	-3.5	-6.9	-3.5	131.5	64.5	3.3	3.3	0.0	3.3	6.6	68.9
1991–1992	131.5	-3.3	6.6	-3.3	3.3	0.0	126.2	108.4	25.4	-10.1	0.0	-10.1	15.2	121.7
1992–1993	126.2	3.3	6.6	-6.6	0.0	3.3	128.5	121.7	7.5	0.0	2.5	2.5	10.0	130.6
1993–1994	128.5	-6.7	10.1	6.7	16.8	10.1	141.4	130.6	-7.4	14.8	0.0	14.8	7.4	135.5
1994–1995	141.4	0.0	6.6	0.0	6.6	6.6	144.5	135.5	4.8	-2.4	0.0	-2.4	2.4	135.2
1995–1996	144.5	0.0	9.6	0.0	9.6	9.6	149.8	135.2	-4.8	2.4	0.0	2.4	-2.4	131.7
1996–1997	149.8	6.3	3.1	0.0	3.1	9.4	157.3	131.7	9.6	4.8	-2.4	2.4	12.0	144.1
1997–1998	157.3	-3.2	-12.8	0.0	-12.8	-16.1	144.5	144.1	-2.5	-7.4	-2.5	-9.8	-12.3	134.8
1998–1999	144.5	0.0	-13.0	0.0	-13.0	-13.0	133.2	134.8	7.4	-12.3	0.0	-12.3	-4.9	130.4
1999–2000	133.2	3.3	0.0	-3.3	-3.3	0.0	134.8	130.4	4.9	-14.8	-4.9	-19.8	-14.8	116.1
2000–2001	134.8	33.2	6.6	3.3	10.0	43.1	179.2	116.1	-4.9	-17.1	-2.4	-19.6	-24.5	90.6
2001–2002	179.2	10.0	-10.0	-6.6	-16.6	-6.6	172.5	90.6	0.0	21.7	0.0	21.7	21.7	110.9
2002–2003	172.5	19.6	-9.8	0.0	-9.8	9.8	180.0	110.9	-7.1	0.0	0.0	0.0	-7.1	101.9
2003–2004	180.0	25.6	-9.6	3.2	-6.4	19.2	195.5	101.9	2.3	16.4	0.0	16.4	18.7	119.1

Source: SMDB, CIHI.

Table C16g. Impact on Physician-to-Population Ratios by Type of Migration and Migration Period, Nunavut, 1986–1987 to 2003–2004

	Nunavut						
		Contributions to Physician-to-Population Ratios by:					
Migration Period	Ratio at Beginning of Migration Period	Net Gains and Losses: Non-Migrants	Net Gains and Losses: Interprovincial Migration	Net Gains and Losses: Immigration/Emigration	Net Gains and Losses: Overall Migration	Net Gains and Losses: Overall Growth	Ratio at End of Migration Period
1-Year							
1991–1992	36.1	8.7	13.1	0.0	13.1	21.8	56.8
1992–1993	56.8	-4.2	-12.7	0.0	-12.7	-17.0	38.2
1993–1994	38.2	-4.1	0.0	0.0	0.0	-4.1	32.8
1994–1995	32.8	0.0	0.0	-4.0	-4.0	-4.0	28.0
1995–1996	28.0	0.0	-3.9	0.0	-3.9	-3.9	23.4
1996–1997	23.4	3.9	-3.9	0.0	-3.9	0.0	23.2
1997–1998	23.2	3.8	0.0	0.0	0.0	3.8	26.5
1998–1999	26.5	0.0	14.9	0.0	14.9	14.9	41.0
1999–2000	41.0	0.0	-14.5	0.0	-14.5	-14.5	25.5
2000–2001	25.5	7.1	-7.1	0.0	-7.1	0.0	24.9
2001–2002	24.9	3.5	3.5	3.5	7.0	10.4	34.8
2002–2003	34.8	3.4	-3.4	0.0	-3.4	0.0	34.3
2003–2004	34.3	-3.4	-6.7	0.0	-6.7	-10.1	23.6

Source: SMDB, CIHI.

Appendix D—National Occupational Classification (NOC) Definitions[73,x]

D011 Specialist Physicians

This unit group includes specialist physicians in clinical medicine, in laboratory medicine and in surgery. Specialists in clinical medicine diagnose and treat diseases and physiological or psychiatric disorders and act as consultants to other physicians. Specialists in laboratory medicine study the nature, cause and development of diseases in humans. Specialists in surgery perform and supervise surgical procedures. Specialists in clinical medicine usually work in private practice or in a hospital, while those in laboratory medicine and in surgery usually work in hospitals. Residents in training to become specialist physicians are included in this unit group.

Exclusions

- Medical directors are classified in unit group A321—Managers in Health Care
- Family physicians and family doctors are classified in unit group D012—General Practitioners and Family Physicians
- Dental surgeons are classified in unit group D013—Dentists
- Chiropractors are classified in unit group D022—Chiropractors
- Osteopathic surgeons and naturopathic physicians are classified in unit group D023—Other Professional Occupations in Health Diagnosing and Treating
- Homeopathic practitioners are classified in unit group D232—Midwives and Practitioners of Natural Healing

D012 General Practitioners and Family Physicians

General practitioners and family physicians diagnose and treat the diseases, physiological disorders and injuries of patients. They provide primary contact and continuous care toward the management of patients' health. They usually work in private practice, including group or team practices, hospitals and clinics. Residents in training to be general practitioners and family physicians are included in this unit group.

Exclusions

- Chiropractors are classified in unit group D022—Chiropractors
- Other professional occupations in health diagnosing and treating such as podiatrists, chiropodists, naturopathic and osteopathic physicians are classified in unit group D023—Other Professional Occupations in Health Diagnosing and Treating
- Medical doctors specializing in a particular field of medicine are classified in unit group D011—Specialist Physicians
- Occupations in medicine and health such as acupuncturists, homeopathic practitioners, herbalists and rolfers are classified in unit group D232—Midwives and Practitioners of Natural Healing

x. The text contained in Appendix D is used with permission from Statistics Canada.

D013 Dentists

Dentists diagnose, treat, prevent and control disorders of the teeth and mouth. They work in private practice or may be employed in hospitals, clinics, public health facilities or universities.

Exclusions

- Denturists are classified in unit group D221—Denturists
- Dental hygienists and dental therapists are classified in unit group D222—Dental Hygienists and Dental Therapists
- Dental technicians are classified in unit group D223—Dental Technologists, Technicians and Laboratory Bench Workers
- Dental assistants are classified in unit group D311—Dental Assistants

D021 Optometrists

Optometrists examine eyes, prescribe and fit eyeglasses and contact lenses and recommend treatments such as exercises to correct vision problems or ocular disorders. They work in private practice, clinics and community health centres.

Exclusions

- Ophthalmologists are classified in unit group D011—Specialist Physicians
- Ophthalmic dispensers and opticians are classified in unit group D231—Opticians
- Orthoptist and ophthalmological technicians are classified in unit group D235—Other Technical Occupations in Therapy and Assessment

D022 Chiropractors

Chiropractors diagnose and treat patients' neuromuscular-skeletal disorders of the spine and other body joints by adjusting the spinal column or through other corrective manipulation. Chiropractors are usually in private practice or in clinics with other health practitioners.

D023 Other Professional Occupations in Health Diagnosing and Treating

This unit group includes health professionals who diagnose and treat the diseases and injuries of patients and who are not elsewhere classified. This includes doctors of podiatric medicine, chiropodists and podiatrists, naturopaths orthoptists and osteopaths. They work in private practices, clinics and hospitals.

Exclusions

- Instructors working in educational institutions are classified in an appropriate unit group of major group E1—Teachers and Professors
- Non-professional diagnosing and treating occupations such as acupuncturists, herbalists, rolfers or shiatsu therapists are classified in unit group D232—Midwives and Practitioners of Natural Healing

D031 Pharmacists

Community pharmacists and hospital pharmacists compound and dispense prescribed pharmaceuticals and provide consultative services to both clients and health care providers. They are employed in community and hospital pharmacies, or they may be self-employed. Industrial pharmacists participate in the research, development, promotion and manufacture of pharmaceutical products. They are employed in pharmaceutical companies and government departments and agencies.

Exclusions

- Managers of a pharmacy or pharmacy department in a retail outlet are classified in unit group A211—Retail Trade Managers
- Pharmacological chemists are classified in unit group C012—Chemists
- Pharmacologists and toxicologists are classified in unit group C021—Biologists and Related Scientists
- Clinical pharmacologists are classified in unit group D011—Specialist Physicians
- Pharmacy assistants are classified in unit group D313—Other Assisting Occupations in Support of Health Services

D032 Dietitians and Nutritionists

Dietitians and nutritionists plan, organize, conduct and supervise programs in nutrition, diet and food service. They are employed in a variety of settings including hospitals, extended-care facilities, public health centres, the food and beverage industry, educational institutions, sports organizations and government, or they may be self-employed.

Exclusions

- Dietary aides and assistants are classified in unit group G961—Food Counter Attendants, Kitchen Helpers and Related Occupations
- Dietary technicians are classified in unit group D219—Other Medical Technologists and Technicians (Except Dental Health)
- Food service supervisors are classified in unit group G012—Food Service Supervisors

D041 Audiologists and Speech-Language Pathologists

Audiologists and speech-language pathologists diagnose, evaluate and treat human communication disorders including hearing, speech, language and voice disorders. Audiologists and speech-language pathologists are employed in hospitals, community and public health centres, extended care facilities, day clinics, rehabilitation centres and educational institutions, or may work in private practice.

Exclusions

- Technicians and other assistants to audiologists and speech-language pathologists are classified in unit group D235—Other Technical Occupations in Therapy and Assessment

D042 Physiotherapists

Physiotherapists assess patients and plan and carry out individually designed treatment programs to maintain, improve or restore physical functioning, alleviate pain and prevent physical dysfunctioning in patients. Physiotherapists are employed in hospitals, clinics, industry, sports organizations, rehabilitation centres and extended care facilities, or they may work in private practice.

Exclusions

- Technicians giving technical assistance to physiotherapists are classified in unit group D235—Other Technical Occupations in Therapy and Assessment

D043 Occupational Therapists

Occupational therapists develop individual and group programs with persons affected by illness, injury, developmental disorders, emotional or psychological problems and aging to maintain, restore or increase their ability to care for themselves and to engage in work, school or leisure. They also develop and implement health promotion programs with individuals, community groups and employers. They are employed in health care facilities, schools and by private and social services agencies, or they may be self-employed.

D044 Other Professional Occupations in Therapy and Assessment

This unit group includes specialized therapists not elsewhere classified who use art, athletic, dance, music or recreational therapy, remedial gymnastics or other techniques to aid in the treatment of mental and physical disabilities. They are employed by establishments such as hospitals, rehabilitation centres, clinics, recreational centres, nursing homes, educational institutions, prisons and day-care facilities or may work in private practice.

D111 Head Nurses and Supervisors

Head nurses and supervisors supervise and coordinate the activities of registered nurses, licensed practical nurses and other nursing personnel in the provision of patient care. They are employed in health care institutions such as hospitals, clinics and nursing homes and in nursing agencies.

Exclusions

- Directors of nursing are classified in unit group A321—Managers in Health Care
- Charge nurses are classified in unit group D112—Registered Nurses

D112 Registered Nurses

This unit group includes registered nurses, registered psychiatric nurses and graduates of a nursing program who are awaiting registration (graduate nurses). They provide direct nursing care to patients, deliver health education programs and provide consultative services regarding issues relevant to the practice of nursing. They are employed in a variety of settings including hospitals, nursing homes, extended-care facilities, rehabilitation centres, doctors' offices, clinics, community agencies, companies and private homes, or they may be self-employed.

Exclusions

- Head nurses and nurse supervisors are classified in unit group D111—Head Nurses and Supervisors
- Licensed practical nurses and registered nursing assistants are classified in unit group D233—Licensed Practical Nurses

D211 Medical Laboratory Technologists and Pathologists' Assistants

Medical laboratory technologists conduct medical laboratory tests, experiments and analyses to assist in the diagnosis, treatment and prevention of disease. They are employed in medical laboratories in hospitals, private clinics, research institutions and universities. Pathologists' assistants assist at autopsies and examinations of surgical specimens or perform autopsies under a pathologist's supervision. They are usually employed in hospitals. Medical laboratory technologists who are also supervisors are included in this unit group.

Exclusions

- Applied chemical technologists not employed in medical laboratories are classified in unit group C111—Chemical Technologists and Technicians
- Biological technologists not employed in medical laboratories are classified in unit group C121—Biological Technologists and Technicians
- Medical laboratory technicians are classified in unit group D212—Medical Laboratory Technicians

D212 Medical Laboratory Technicians

Medical laboratory technicians conduct routine medical laboratory tests and set up, clean and maintain medical laboratory equipment. They are employed in medical laboratories in hospitals, clinics, research institutes and universities and in government research laboratories.

Exclusions

- Applied chemical technicians not employed in medical laboratories are classified in unit group C111—Chemical Technologists and Technicians
- Biological technicians not employed in medical laboratories are classified in unit group C121—Biological Technologists and Technicians
- Medical laboratory technologists are classified in unit group D211—Medical Laboratory Technologists and Pathologists' Assistants

D213 Veterinary and Animal Health Technologists and Technicians

Veterinary and animal health technologists and technicians provide technical support to veterinarians by caring for animals and assisting in the diagnosis and treatment of animal health disorders. They are employed in veterinary clinics, animal hospitals, animal shelters, zoos, animal research laboratories, government and pharmaceutical companies.

Exclusions

- Veterinary assistants and other animal care workers are classified in unit group G923—Pet Groomers and Animal Care Workers

D214 Respiratory Therapists, Clinical Perfusionists and Cardio-pulmonary Technologists

Respiratory therapists assist physicians in the diagnosis, treatment and care of patients with respiratory and cardio-pulmonary disorders. They are employed in hospitals, medical clinics, health units, extended-care facilities, public health centres and respiratory home care companies. Clinical perfusionists provide technical support to patients undergoing cardiac surgery and patients requiring cardio-respiratory support. Cardio-pulmonary technologists assist physicians in the technical aspects of diagnosis and treatment of cardiovascular and pulmonary disease. Clinical perfusionists and cardio-pulmonary technologists are primarily employed in hospitals. Supervisors and instructors of respiratory therapists, clinical perfusionists and cardio-pulmonary technologists are included in this unit group.

D215 Medical Radiation Technologists

This unit group includes technologists who operate radiographic and radiation therapy equipment to administer radiation treatment and produce images of body structures for the diagnosis and treatment of injury and disease. They are employed in hospitals, cancer treatment centres, clinics and radiological laboratories. Medical radiation technologists who are supervisors or instructors are included in this unit group.

D216 Medical Sonographers

Medical sonographers operate ultrasound equipment to produce and record images of various parts of the body to aid physicians in monitoring pregnancies and in diagnosing cardiac, ophthalmic, vascular and other medical disorders. They are employed in clinics and hospitals. Medical sonographers who are supervisors or instructors are included in this unit group.

Exclusions

- Medical laboratory technologists are classified in unit group D211—Medical Laboratory Technologists and Pathologists' Assistants
- Electroencephalographic, electromyography, vascular and other technologists who operate computerized and electronic equipment to aid in the diagnosis of disease are classified in unit group D218—Electroencephalographic and Other Diagnostic Technologists, n.e.c.
- Cardiology technologists are classified in unit group D217—Cardiology Technologists
- Medical laboratory technicians are classified in unit group D212—Medical Laboratory Technicians
- Radiography, nuclear medicine and radiation therapy technologists are classified in unit group D215—Medical Radiation Technologists

D217 Cardiology Technologists

Cardiology technologists operate electrocardiogram and other electronic equipment to record cardiac activity of patients to aid in the diagnosis and treatment of heart disease. They are employed in hospitals and clinics. Cardiology technologists who are supervisors or instructors are included in this unit group.

Exclusions

- Medical laboratory technologists are classified in unit group D211—Medical Laboratory Technologists and Pathologists' Assistants
- Radiography, nuclear medicine and radiation therapy technologists are classified in unit group D215—Medical Radiation Technologists
- Medical sonographers are classified in unit group D216—Medical Sonographers
- Electroencephalographic, electromyography, vascular and other technologists who operate computerized and electronic equipment to aid in the diagnosis of disease are classified in unit group D218—Electroencephalographic and Other Diagnostic Technologists, n.e.c.

D218 Electroencephalographic and Other Diagnostic Technologists, n.e.c.

This unit group includes other diagnostic technologists not elsewhere classified who operate electroencephalographic and other diagnostic equipment to assist physicians in diagnosing diseases, injuries and abnormalities. Electroencephalographic and other diagnostic technologists who are supervisors or instructors are included in this unit group. They are employed in clinics, hospitals and medical laboratories.

Exclusions

- Cardiology technologists are classified in unit group D217—Cardiology Technologists
- Medical laboratory technologists are classified in unit group D211—Medical Laboratory Technologists and Pathologists' Assistants
- Radiography, nuclear medicine or radiation therapy technologists are classified in unit group D215—Medical Radiation Technologists
- Medical Sonographers are classified in unit group D216—Medical Sonographers

D219 Other Medical Technologists and Technicians (Except Dental Health)

This unit group includes medical technologists and technicians not elsewhere classified, such as dietary technicians, ocularists, prosthetists, orthotists, prosthetic technicians and orthotic technicians. Dietary technicians are employed in health care and commercial food service establishments such as hospitals, extended care facilities, nursing homes, schools, cafeterias and fast food outlets. Ocularists are employed in custom ocular prosthetic laboratories, or they may be self-employed. Prosthetists, orthotists and prosthetic and orthotic technicians are employed in hospitals, clinics, prosthetics and orthotics laboratories and prosthetic device manufacturing companies. Prosthetists and orthotists may also be self-employed.

Exclusions

- Dietary aides and assistants are classified in unit group G961—Food Counter Attendants, Kitchen Helpers and Related Occupations

D221 Denturists

Denturists examine patients and design, construct and repair removable dentures. Most denturists work in private practice.

Exclusions

- Dentists are classified in unit group D013—Dentists
- Persons who fabricate dentures in dental laboratories are classified in unit group D223—Dental Technologists, Technicians and Laboratory Bench Workers

D222 Dental Hygienists and Dental Therapists

Dental hygienists provide dental hygiene treatment and information related to the prevention of diseases and disorders of the teeth and mouth. They are employed in dentists' offices, hospitals, clinics, educational institutions, government agencies and private industry. Dental therapists carry out limited dental services related to the prevention and treatment of diseases and disorders of the teeth and mouth. They are employed by the federal government and the provincial governments to provide services in rural and remote communities.

Exclusions

- Dentists are classified in unit group D013—Dentists
- Persons who perform clerical duties and assist dentists in dental offices are classified in unit group D311—Dental Assistants

D223 Dental Technologists, Technicians and Laboratory Bench Workers

Dental technologists and technicians design, prepare and fabricate dentures and dental devices as prescribed by dentists and other specialists. Dental laboratory bench workers assist dental technologists and technicians in preparing and fabricating dentures and other dental devices. They are employed in dental laboratories. Supervisors of dental technologists and technicians are also included in this unit group.

Exclusions

- Persons who fit patients for dentures and construct dentures in their own practices are classified in unit group D221—Denturists

D231 Opticians

Opticians fit clients with prescription eyeglasses or contact lenses, assist clients in the selection of eyeglass frames, arrange for the production of eyeglasses or contact lenses and mount lenses in eyeglass frames. They are employed in optical retail outlets or other establishments with optical dispensing departments, or they may be self-employed. Student opticians and opticians who are managers of optical retail outlets are included in this group.

Exclusions

- Managers of optical dispensing departments or of optical retail outlets are classified in unit group A211—Retail Trade Managers

- Optometrists examine eyes, prescribe eyeglasses and contact lenses in addition to fitting eyeglasses and are classified in unit group D021—Optometrists
- Optical laboratory technicians are classified in unit group D313—Other Assisting Occupations in Support of Health Services

D232 Midwives and Practitioners of Natural Healing

Midwives provide full-course care to women and their babies during pregnancy, labour, birth and the postnatal period. They are employed in hospitals, birthing centres and private practice. Practitioners of natural healing provide alternative forms of health care to patients. They are employed by clinics, health clubs, spas or health food stores, or they may work in private practice.

D233 Licensed Practical Nurses

Licensed practical nurses provide nursing care usually under the direction of medical practitioners, registered nurses or other health team members. They are employed in hospitals, nursing homes, extended-care facilities, rehabilitation centres, doctors' offices, clinics, companies, private homes and community health centres. Operating room technicians are included in this unit group.

Exclusions

- Nursing aides and orderlies, as well as ward aides, are classified in unit group D312—Nurse Aides, Orderlies and Patient Service Associates

D234 Ambulance Attendants and Other Paramedical Occupations

This unit group includes workers who administer pre-hospital emergency medical care to patients and transport them to hospitals or other medical facilities for further medical care. They are employed by private ambulance services, hospitals, fire departments, government departments and agencies, manufacturing firms, mining companies and other private-sector establishments.

D235 Other Technical Occupations in Therapy and Assessment

This unit group includes workers, not elsewhere classified, who perform various technical therapy and assessment functions. Some may assist professionals such as audiologists, speech-language pathologists, ophthalmologists and physiotherapists. They are employed in hospitals, clinics, extended-care facilities, rehabilitation centres, educational institutions and in the private practices of the professionals they assist. Massage therapists may also be self-employed.

Exclusions

- Naturopathic and osteopathic physicians are classified in unit group D023—Other Professional Occupations in Health Diagnosing and Treating
- Faith healers and religious healers are classified in unit group E216—Other Religious Occupations

D311 Dental Assistants

Dental assistants assist dentists during the examination and treatment of patients and perform clerical functions. Dental assistants work primarily in dentists' offices, or they may be employed by government and educational institutions.

Exclusions

- Dental hygienists are classified in unit group D222—Dental Hygienists and Dental Therapists
- Dental technicians are classified in unit group D223—Dental Technologists, Technicians and Laboratory Bench Workers

D312 Nurse Aides, Orderlies and Patient Service Associates

Nurse aides, orderlies and patient service associates assist nurses, hospital staff and physicians in the basic care of patients. They are employed in hospitals, nursing homes and other health care facilities.

Exclusions

- Registered nursing assistants are classified in unit group D233—Licensed Practical Nurses
- Visiting homemakers and housekeepers are classified in unit group G811—Visiting Homemakers, Housekeepers and Related Occupations

D313 Other Assisting Occupations in Support of Health Services

This unit group includes workers who provide services and assistance to health care professionals and other health care staff. They are employed in hospitals, clinics, offices of health care professionals, nursing homes, optical retail stores and laboratories, pharmacies and medical pathology laboratories.

Exclusions

- Operating room technicians are classified in unit group D233—Licensed Practical Nurses
- Pathologists' assistants are classified in unit group D211—Medical Laboratory Technologists and Pathologists' Assistants

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