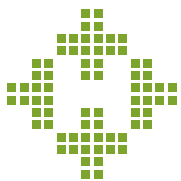


Supply, Availability and Use of Family Physicians in Winnipeg

May 2003



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EXECUTIVE SUMMARY

A large and growing number of people in Canada have expressed concern that access to family physicians in their communities is deteriorating (Angus Reid Survey, 1999; Conference Board of Canada, 2001) and the medical profession shares this perspective (Canadian Medical Association, 1999; College of Family Physicians of Canada, 2001). The College of Family Physicians of Canada (2001) recently reported that family physicians work 53 hours per week and many have expressed concern about a shortage of family and general practitioners (FPs¹). This view of physician supply is in sharp contrast to what people were saying one decade ago. Articles published in the Winnipeg Free Press in the early 1990s reflected concerns of an over-supply. Manitoba's Minister of Health, as reported in the Winnipeg Free Press on July 31, 1992, when medical school enrolments were cut, indicated "There are twice as many physicians serving the same numbers of people in Manitoba today versus 20 years ago." Results of a survey conducted by Angus Reid for the Canadian Medical Association, as described in the Winnipeg Free Press on June 22, 1993, "Almost half of physicians in Canada said enrolment in medical schools should be cut." On that same day in 1993 the President of Canadian Medical Association, as reported in the Winnipeg Free Press, suggested "It will be possible to serve all areas with Canadian-trained physicians."

Headlines published in the Winnipeg Free Press in 2002 echo local concern today: "Calls inundate find-a-physician telephone line" (January 9, 2002) and "Burned-out physicians put pressure on Manitoba health care: Cure sought for family MDs" (February 1, 2002). But how could this occur when many people in Canada, and Manitoba, were concerned with physician surpluses in the early 1990's, and the number of Winnipeg FPs and the population of Winnipeg has not changed substantially over the past 10 years? There appears to be a 'disconnect' between local impressions and estimates of physician supply.

The purpose of this report is to provide information to policy-makers, health care administrators, physicians and residents of Manitoba about the supply, availability and use of FPs in Winnipeg for the 10-year fiscal period 1991/92 to 2000/01. We focused on the most populated urban jurisdiction of the province (approximately 650,000 residents), as concern about the availability of FPs in Winnipeg is a relatively recent development. The supply and use of FPs in more rural jurisdictions is described elsewhere (Roos et al., 1996; Black et al., 1999). It is our hope that the information in this report will inform discussions about the status of FP services in Winnipeg and provide baseline measures toward which the future can be compared.

¹ Throughout this report, we use the term family physician (FP) to represent general and family practitioners.

This report does not provide all the answers but provides a basis for more informed decision-making concerning physician supply policy. Indeed, we also hope that our findings will stimulate discussions in other jurisdictions in Canada, as this report provides more detailed temporal analysis regarding supply, availability and use than any other study to address the issue of why there are such widespread perceptions of FP shortages in urban populations in Canada only 10 years after widespread perceptions of physician surpluses.

All measures of utilization were derived by assessing Winnipeg residents' visits with FPs anywhere in the province; all measures of supply were derived by measuring encounters between Winnipeg FPs and residents who lived anywhere in the province. All measures are derived from data from FPs who worked on a fee-for-service basis or by FPs who received salary remuneration and submitted 'evaluation claims'. Data for the very small number of Winnipeg FPs who received salary remuneration and did not submit evaluation claims are not available. Insofar as these missing data from salaried practitioners have increased over time, we may have overestimated declines in utilization and underestimated supply. Data derived from FPs who provided ambulatory care in either of the two largest emergency departments, to residents of personal care homes, or to any of the community clinics in Winnipeg were included. Measures of population health and morbidity were developed using administrative data.

Winnipeggers Use of FPs

After accounting for age and gender changes in the population of Winnipeggers over the decade (i.e., standardization of rates), we estimated a one per cent decline in the proportion of residents who visited an FP at least once and a three per cent decline in standardized visit rates from 3.60 to 3.49 visits per resident per year. If Winnipeg residents had visited FPs to the same extent in 2000/01 as they did in 1991/92, the city would require approximately 10 more full-time FPs. However, a decrease in visits to FPs might be expected over the period since there appears to be improvements in the health of Winnipeg residents as measured by a drop in premature mortality (which is associated with population morbidity (Frohlich et al., 2001)) and an increase in life expectancy. It is difficult to ascertain, however, whether improved health status would warrant more (e.g., preventive health services) or less visits to FPs. Conversely, it could be that increased life expectancy may be associated with an increase in the prevalence of chronic health conditions (e.g., diabetes (Hux et al., 2002)) which would warrant more care for disease management. Although recent research suggests that although the population is aging, recent cohorts of older adults are healthier than their predecessors.

When we looked at the overall pattern of how FP visits were delivered to people in Winnipeg, it appears that individuals with health conditions that require more care received more care. For example, relative to the average person who visited an FP approximately 3.5 times in 2000/01, people treated for hypertension, psychotic or non-psychotic mental disorders had annual visit rates almost twice as high. Furthermore, residents of areas with healthier populations (higher life expectancy, lower premature mortality rates) visited FPs less often than people who resided in neighbourhoods with less healthy populations.

Over the past decade temporal changes appear to have occurred such that delivery of care has responded well to the health needs of Winnipeggers. For example, utilization of FP services among residents of areas with the most healthy population declined at a faster rate than the decline in use among residents who lived in neighbourhoods with the least healthy population. Between 1991/92 and 2000/01 the rate at which residents treated for hypertension, psychotic or non-psychotic mental disorders contacted an FP remained relatively stable, relative to population-level temporal trends in visit rates, despite an increase in treatment prevalence of these conditions.

Recent headlines and stories have suggested that individuals are having more problems finding an FP. We had hypothesized that people who 'don't have' an FP might have to see more different FPs to obtain care than those who 'have' an FP. And, if the proportions of people who 'don't have' an FP were increasing on average each year, we expected to find that Winnipeggers were seeing more different FPs over time. This was clearly not the case. Among the general population, essentially nothing has changed. Winnipeggers were seeing just as many different FPs at the end of the decade as at the beginning. In fact, between 1991/92 and 2000/01 the most intense users of FP services (i.e., 10 or more visits per year) saw slightly fewer different FPs in a single year (or over a three-year period).

The most substantial shifts in FP visit rates over this period were among the young and among the old. FP visit rates for children were down substantially over the period (i.e., 25 per cent decline for children five years of age or less and 19 per cent decline for children six to 19 years), while visit rates of others, particularly seniors, increased (i.e., 13 per cent). These patterns held regardless of whether only visits to FPs were examined or whether all visits including those to specialists were examined. The reason children saw FPs less often was not because they saw paediatricians or other specialists more often. Seniors saw FPs more often and specialists less often.

Between 1991/92 and 2000/01, the proportion of FP visits delivered to seniors increased from 20.3 to 25.5 per cent. Indeed, by 2000/01 one in every four visits to an FP was by a senior. Residents over 65 years of age represent-

ed only 14.1 per cent of the population in 2000/01. The increase in the proportion of encounters with older adults appears to be more of a function of increases in visits per senior rather than growth in the size of the senior population. By 2000/01 the proportion of encounters by seniors would be 21.9 per cent (rather than 25.5), if seniors used FPs at the same rate as they had in 1991/92.

The age structure of the population of Winnipeg changed in other ways over time with significant increases in the number of baby boomers (i.e., 24.6 per cent increase in those between the ages of 45 and 64), and of seniors (i.e., 7.4 per cent increase in those 65 years of age and over). This occurred at a time when the size of the paediatric population, particularly those less than five years of age, declined. These demographic changes, coupled with intensification of service use among seniors and less utilization among the young, shifted the proportion of total encounters accounted for by different patient age groups. Should these demographic and temporal patterns continue we would expect the proportion of total encounters attributable to seniors to increase in the future. This has important clinical and policy implications if seniors take more time per visit, more intensive ambulatory care per visit, and/or require more visits than patients of other ages.

While some people may have 'gained' or 'lost' services provided by FPs over 10 years, it is difficult to determine whether increases or decreases in utilization result in more or less optimal or appropriate use, as this relies on judgements about the effectiveness of care and capacity to benefit from care. Evidence for making these judgements is not available. One way of gaining perspective on this question is to examine the supply and availability of FPs in Winnipeg, as they have changed over time and in comparison to other provinces (see below). While we found that Winnipeggers had not changed substantially in their use of FP services over the last 10 years, we have not retrospectively measured what difficulties (if any) Winnipeggers encounter when they try to see an FP. For example, it may have taken longer for individuals to make an appointment, even though over the course of a year just as many appointments were kept.

Supply and Availability of Winnipeg FPs

Between 1991/92 and 2000/01, the number of Winnipeg FPs who billed Manitoba Health at least once declined from 634 to 605. Despite this five per cent reduction, the number of visits generated by Winnipeg FPs declined only three per cent from 2.36 million encounters in 1991/92 to 2.28 million in 2000/01. And, measures of workload for the average FP increased slightly.² For example, the number of visits per annum provided by an average FP increased two per cent over the period. Also, part-time practitioners appear to be working more days per year.

Since the number of Winnipeggers is relatively stable across time, the number of Winnipeg FPs per 100,000 Winnipeg population declined five per cent from 97 to 92

² Our measures of workload are not based on time, but rather on information derived from billing data (e.g., frequency of visits, full-time equivalencies).

between 1991/92 and 2000/01. Others have estimated that there were 92 FPs per 100,000 population for the entire province of Manitoba in 2000, which is similar to our Winnipeg estimate of supply. Having 92 FPs per 100,000 residents places the city and the province sixth among the 13 Canadian provinces and territories, ranking Manitoba ahead of Alberta, similar to Saskatchewan and lower than British Columbia on this measure of FP supply (Chan, 2002a). The FP-to-population ratio peaked at 100 per 100,000 Winnipeg population in 1994/95 and 1995/96, which represents a decline of eight per cent from that time until 2000/01. This pattern is not unique to Winnipeg. A recent national study found a 5.1 per cent decline in physician-to-population (FP and specialists) ratios between 1993 and 2000 (Chan, 2002a).

So, why are there reports that physician workloads are unmanageable when supply (in the aggregate) and workloads (for average FPs) remain relatively stable? And, why are some Winnipeggers reporting difficulty in accessing FPs and increasingly reporting that they don't have an FP when utilization (by the average person) and the number of FPs seen per year (by the average person) remain relatively stable? Let's examine, one-by-one, the most popular hypotheses regarding what might be happening:

Are male FPs working more because there are more female FPs in the workforce and females tend to work less?

- No, this doesn't appear to be the case. We did find that female FPs, on average, carried workloads that were approximately 80 per cent that of male FPs (this observation is not unique to Winnipeg) (Canadian Institute for Health Information, 2000) and that the relationship between physician gender and workload remained stable over the decade.³ However, despite more substantial changes in the gender structure of the workforce in other jurisdictions in Canada, the proportion of females among the FP workforce in Winnipeg increased from 29 to 31 per cent between 1991/92 and 2000/01. And, since the number of Winnipeg FPs remained relatively stable over the period, so did the supply of female FPs. Therefore, despite gender differences in workloads, it is unlikely that the gender mix in the workforce changed enough to significantly alter male FP workloads.

Are FPs increasingly specializing, such that Winnipeggers are having more difficulty finding an FP who doesn't restrict their practice to sport injuries or some other special focus?

- No, this doesn't appear to be the case. The proportion of the workforce that were full-time FPs who focused their care on ambulatory care serv-

³ While researchers consistently report physician gender differences in workloads, there are no gender differences when workloads of physicians, who do not have children, are compared (Buske, 1997).

ices and provided services directed at a wide array of diagnostic conditions (hereinafter referred to as full-scope FPs) remained stable at approximately 80 per cent of the population of full-time FPs who focus on ambulatory care. This was true in each year between 1991/92 and 2000/01. And, since the number of full-time FPs remained relatively stable over the period, so did the number of full-scope generalists.

We also assessed the supply and workloads of FPs who focused their practice on caring for hospital patients and/or nursing home residents. We found a reduction in the number of these FPs over the 10-year period (i.e., 27 per cent decline), and this reduction may be due in part to the increasing proportion of this type of practitioner who receives salary remuneration and does not submit 'evaluation claims'. But, FPs whose scope of practice targeted these populations increased their workforce participation. That is, the services provided by this type of FP increased from 19 to 26 full-time equivalents (i.e., 37 per cent increase).

Is the availability of Winnipeg FPs to serve Winnipeggers hindered due to temporal shifts in rural residents use of Winnipeg FP services?

- No, this doesn't appear to be the case. During any one year between 1991/92 and 2000/01, approximately 15 per cent of the patients who saw Winnipeg FPs were from jurisdictions outside of the city. Visits to Winnipeg FPs by Non-Winnipeg residents accounted for approximately 10 per cent of the total number of services provided by these practitioners in any single year. Therefore, the availability of Winnipeg FPs to serve Winnipeggers did not change over time due to shifts in the number of Non-Winnipeg residents who sought care nor to the volume of services non-residents received from Winnipeg FPs.

Are young FPs working less than their predecessors because they seek a more balanced lifestyle, which includes more time for leisure and family life?

- No, this does not appear to be the case. While we don't have any data to understand differences in lifestyle preferences of young FPs in 1991/92 or 2000/01, FPs less than 30 years of age appear to be just as, or slightly more, productive than their predecessors. By 2000/01, however, this age group represented only three per cent of the workforce (i.e., 17 FPs), so any lifestyle changes among this group of young FPs, relative to their predecessors, would not substantially impact aggregate supply.

The number of FPs under the age of 30 declined substantially over the 10-year period. This reduction in the youngest cohort of FPs has been documented in other jurisdictions in Canada, and has been attributed as the main cause of temporal changes in physician supply over the last decade (Chan, 2002a). This may relate indirectly to changes in length of residency requirements and/or medical students increasingly electing to pursue careers as specialists (Chan, 2002a; Rosser, 2002). Clearly, these findings and observations have implications for future supply of FPs, if they hold true in Manitoba. In terms of medical school enrolment at the University of Manitoba, during the period 1991 to 2000, the number of enrollees remained relatively stable at 72 to 75

but increased to 85 in 2001. While this report did not investigate the relationship between medical school enrolments and local FP supply, nor the extent to which physicians elect to practice family medicine, it is important to recognize that a number of specialists such as paediatricians and gynaecologists provide primary care services in Winnipeg.

Do Winnipeggers report that they do not have an FP because an increasing number of FPs are reaching retirement and/or leaving the workforce?

- No, this doesn't appear to be the case. The number of FPs over 60 was stable—94 physicians in 1991/92 and 92 in 2000/01. Additionally, the number of FPs leaving the workforce in any one year has been stable at approximately 25 since 1996/97. In fact, the workforce turnover rate remained stable between 1996/97 and 2000/01. Therefore, there should be no temporal changes in workforce turnover such that Winnipeggers increasingly are left without an FP when their FP stops providing clinical services in the city. However, given that 39 per cent of the workforce was between the ages of 50 and 59 in 2000/01 a large number of FPs can be expected to retire in the next 20 years.

Do physicians work more because the workforce is aging and older physicians work less?

- No, this doesn't appear to be the case. It is true that the workforce is aging, as the average age of Winnipeg FPs increased from 42.6 to 46.4 years. The change in the age structure of the workforce is related to growth in the number of FPs between 40 and 59 years, and a decline in the number of FPs less than 39 years (Figure 1.1). Interestingly, FPs between 40 and 59 years are typically more productive than most other age groups. We estimated that changes in the age structure of the FP workforce should have resulted in an increase in workforce productivity in the order of 12 per cent, if the relationship between age and workloads that existed in 1991/92 occurred in 2000/01. These gains in productivity did not occur.

Older FPs did not work less than other FPs—quite the contrary—older FPs provided more visits on an annual basis than younger physicians. In 2000/01 FPs between the age of 60 and 69 provided 5,671 visits per annum, on average, and were the most productive age group at that time. In 1991/92, FPs between the age of 60 and 69 provided 4,250 visits per annum, which is slightly higher than the average workload of all Winnipeg FPs (i.e., 4,198) in that year (Figure 1.2).

Figure 1.1: Number of Practicing Winnipeg FPs, by Age Category, 1991/92 - 2000/01

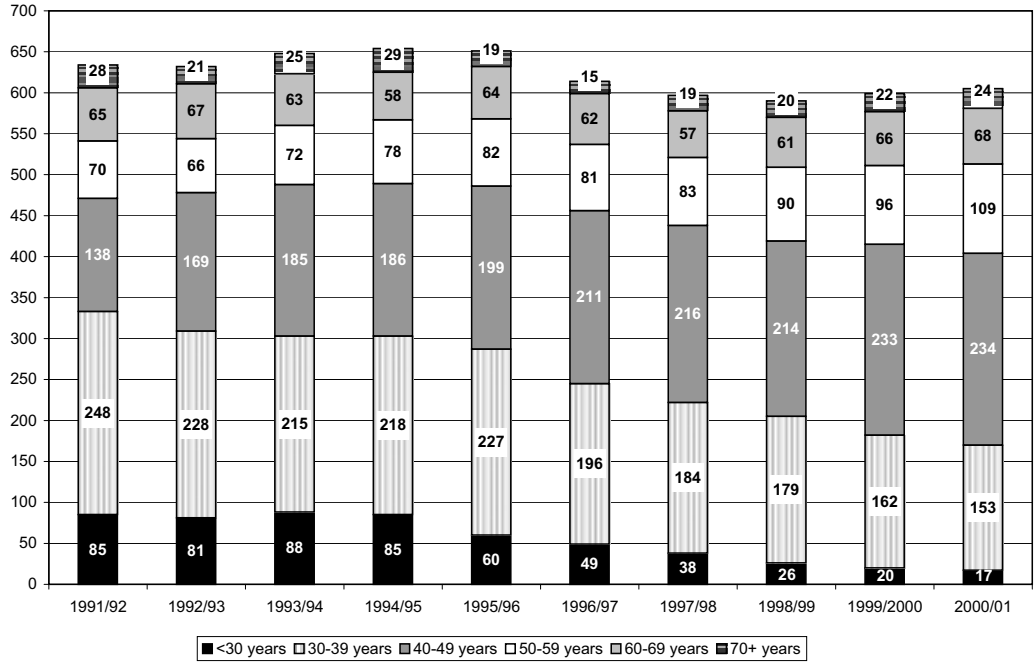
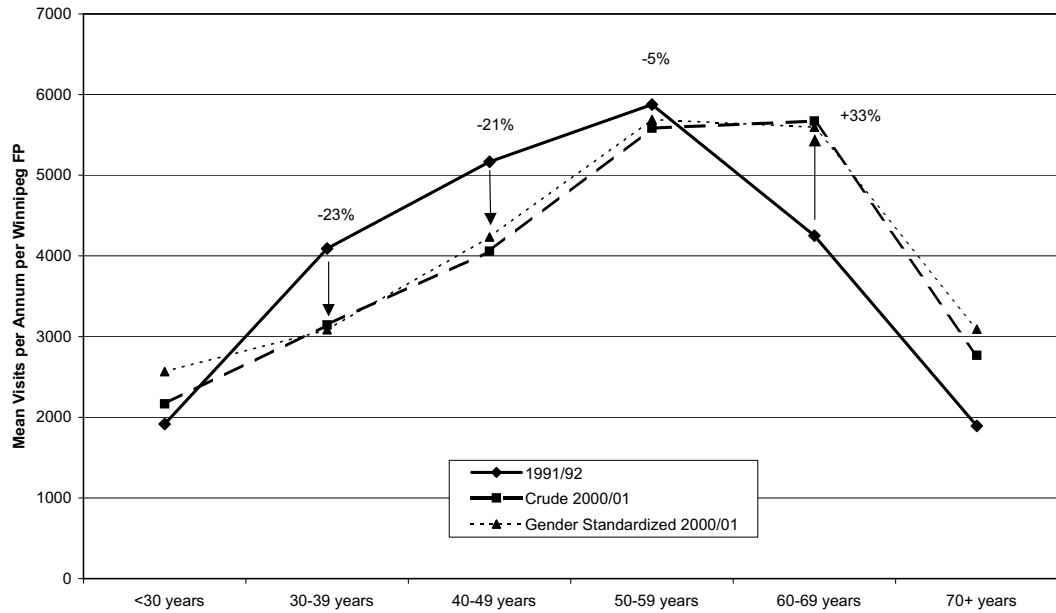


Figure 1.2: Mean Visits per Annum per Winnipeg FP, by Age, 1991/92 and 2000/01



So...What is happening?

On the supply side, the number of FPs declined five per cent and the number of total visits provided by these practitioners declined three per cent. So, there have been some gains in workforce productivity to enable five per cent fewer physicians to produce only three per cent less visits. From a utilization perspective, the proportion of residents who visited an FP at least once declined one per cent and age and gender standardized visit rates per person declined three per cent over the 10-year term. Yet, despite what would appear to be relative stability in supply and utilization local newspapers report that Winnipeggers have trouble accessing FPs and at least some FPs argue that workloads are high and increasing. How could shortages of FPs occur in 2000/01 when the FP to 100,000 population was only five per cent lower than it was in a period of time when supply was considered to be too high?

Has there been a fundamental shift within the FP workforce that would account for some physicians arguing that workloads are high and increasing and headlines suggesting that Winnipeggers are having more problems finding an FP and accessing their care?

- Yes, despite relative stability in the workloads of the 'average' FP, there have been substantial temporal changes in the relationship between age and workload among physicians in the workforce. As illustrated in Figure 1.2, FPs between the age of 30 and 50 years in 2000/01 were providing approximately 20 per cent less visits per annum than their same age peers did 10 years ago. FPs, between 50 and 59, were providing slightly less (i.e., five per cent), and FPs over 60 in 2000/01 were providing over 30 per cent more visits per annum than their same age peers did in 1991/92. This pattern of reductions in workload among physicians between 30 and 59 years of age in 2000/01, relative to their same age peers in 1991/92, is true for male and female FPs. These patterns suggest that there are intergenerational differences in workloads such that the relationship between age and productivity has changed over time.

It is important to know that 64 per cent of the workforce was between the age of 30 and 49 in 2000/01; and this is the generation that is providing on the order of 20 per cent less visits per annum than their same age peers did in 1991/92. An additional 18 per cent of the workforce was between the ages of 50 and 59 in 2000/01; these FPs worked five per cent less than their same age predecessors did in 1991/92.

So, when 82 per cent of the workforce provides fewer services than their same age predecessors 10 years prior, and a relatively stable number of FPs provide relatively the same level of services, some age cohort of FPs

must have substantially higher workloads than their peers did one decade ago. Our analysis would suggest that it is the 11 per cent of FPs between 60 and 69 years of age in 2000/01, who have substantially higher workloads (i.e., 33 per cent) than their same age peers in 1991/92. Additionally, this generation of older physicians has always had one of the highest workloads relative to all other age groups. It would appear that the cohort of FPs between 60 and 69 has kept supply measures, in the aggregate, stable despite reductions in workloads assumed by FPs who were 30 to 59 years of age in 2000/01. As mentioned, we also note that part-time FPs are working more days per year in 2000/01 than in 1991/92 (i.e., 99 versus 83 full-time days per year, on average).

FPs, who have been Winnipeg FPs throughout the study period, are providing substantially less visits (i.e., 12 per cent less) in 2000/01 relative to their workloads in 1991/92. And, these practitioners made up approximately 65 per cent of the workforce in 2000/01. By comparison, FPs who have not been resident throughout the time have increased their workloads. But, the average workloads of this more 'transient' cohort have always been and remain less than, on average, those who have been Winnipeg FPs for the 10-year period.

So, why might FPs work substantially more or less than their predecessors? Could it be that FPs have expectations of how much they will work and don't take on new patients once they achieve or exceed a desired workload? And, might workload expectations vary between generations? Might FPs between the ages of 30 and 59 in 2000/01 have workloads at or above what they currently desire, despite the fact that their workloads are less than their same age predecessors? Might these same FPs be reluctant to take on new patients once they 'establish' a practice to avoid any expansion of current workloads? Might FPs over the age of 60 in 2000/01 have workloads at or above that which they desire or expected at their age? Might these same FPs have expected declines in their workloads, like their predecessors experienced, but the opposite is happening? Might these same FPs be reluctant to take on new patients in an attempt to slow down their growing workloads in anticipation of retirement? Might FPs who reside in a community for a long period of time and have established relationships with an aging population have experienced an increase in workload due to the increase in demands for care among residents who deem them to be their FP? These questions should form the basis of further research.

Conclusion

This report documents relatively stable trends in the supply, use and availability of FP services, but substantial temporal shifts in workloads between cohorts of physicians who vary in their age. Our ability to answer the most pressing issues facing policy-makers, administrators, physicians and Manitobans, who seek to understand the issues surrounding temporal changes in supply, availability and use of FP services relies on our ability to provide information on what has actually happened. We have established that between 1991/92 and 2000/01, the proportion of residents who visited an FP at least

once declined one per cent and standardized visit rates per person declined three per cent. We know that children see FPs less and older adults between the ages of 65 and 84 are visiting FPs more frequently. Nothing in this analysis addresses what level of care provision to the population or any of these groups is appropriate or the difficulties Winnipeggers may encounter in arranging to visit an FP.

We also know that the supply and workloads of FPs, in the aggregate, has also been relatively stable between 1991/92 and 2000/01 as the number of FPs declined five per cent and workloads for the 'average' physician increased one to two per cent. However, there have been substantial inter-generational changes over the decade in the distribution of work among FPs in different age groups. The bulk of the workforce is between the ages 30 to 50 and these FPs are providing 20 per cent less visits per annum than their same age predecessors did one decade ago and those over 60 are working more.

This project was never designed to estimate the impact of temporal and/or current patterns of supply and use on the future availability of FP services. But, the age structure changes of the Winnipeg resident and FP populations, coupled with the intensification of services to seniors and intergenerational trends in workloads of FPs who vary in their age, point to the urgency of conducting this type of research today to plan for the future. We see these issues to be the important research questions of today.

KEY MESSAGES

There has been a three per cent decline in age- and gender-standardized visit rates to FPs by Winnipeg residents over a 10-year period. Winnipeggers see the same number of different FPs in 2000/01 as they did in 1991/92; and intense users, on average, see slightly fewer FPs in any one-year, or three-year, period.

Visits rates were relatively stable among populations with special health conditions (e.g., mental disorders, diabetes) between 1991/92 and 2000/01. Vulnerable populations received more care than the average Winnipegger.

The most substantial shifts in FP visit rates were among the young and among the old. FP visit rates among children less than 12 years declined (i.e., 25 per cent) while visit rates of others, particularly seniors, increased (i.e., 13 per cent) between 1991/92 and 2000/01. These patterns held regardless of whether only visits to FPs were examined or whether all visits including those to specialists were examined. The reason children saw FPs less often was not because they saw paediatricians or other specialists more often. Seniors visited FPs more often and saw specialists less often.

Between 1991/92 and 2000/01, there was a five per cent decline in the number of Winnipeg FPs, a five per cent decline in FP to 100,000 population ratios, a four per cent decline in FP full-time equivalents (FTEs) per 100,000. Workloads remained relatively stable whether measured using average visits per day, average visits per year, or FTE per FP indicators. Any bias in the study, due to the small and increasing number of salaried physicians who do not submit evaluation claims and therefore whose work is not included in these estimates, would result in underestimating workload and measures of supply in more recent years. So, real change may be even less than stated.

The proportion of female FPs among the workforce was 29 per cent in 1991/92 and 31 per cent in 2000/01. There were no more or less FPs entering or exiting the workforce each year, and labour force turnover was stable at eight per cent per annum between 1996/97 and 2000/01.

The proportion of the workforce that were full-time FPs who provided services directed at a wide array of diagnostic conditions remained stable at 80 per cent of full-time FPs who focus their practice on ambulatory care. This was true in each year between 1991/92 and 2000/01. The number of FPs who focus their practice on caring for hospital patients and/or nursing home residents declined. But, the services provided by this group of practitioners increased from 19 to 26 full-time equivalents over the period.

Since supply in the aggregate is relatively stable across time, when a portion of the workforce provides less visits per annum, others must provide more visits per annum to keep supply stable. FPs between 30 and 49 years of age in 2000/01 appear to be providing substantially less visits per annum (i.e., 20 per cent) than their age peers did in 1991/92; and FPs 50 to 59 years worked five per cent less. These physicians collectively

represented over 80 per cent of the workforce. At the same time FPs 60 to 69 years of age in 2000/01 worked substantially more (i.e., 30 per cent) than their same age peers in 1991/92; these physicians represented 11 per cent of the workforce. Therefore, there appears to be a substantial intergenerational shift in workload over the 10 years.

Temporal changes in the age structure of the Winnipeg resident and FP populations, reductions in the number of FPs less than 30, intergenerational differences in workloads among FPs, coupled with intensification of services to seniors and an aging population, point to the urgency of conducting workforce planning research today to plan for the future.

1.0 INTRODUCTION

There is a perceived serious shortage of family physicians in Winnipeg. However, in 2000/01, the FP to 100,000 population ratio was 92 in comparison to 97 in 1992/93, when supply was considered to be too high.

A large and growing number of people in Canada have expressed concern that access to family physicians in their communities is deteriorating (Angus Reid Survey, 1999; Conference Board of Canada, 2001) and the medical profession shares this perspective (Canadian Medical Association, 1999; College of Family Physicians, 2001). Yet, in 2001, 87.7 per cent of Canadians reported that they have a regular family physician to provide routine care (San Martin, 2002). By 2002, Canadians were reasonably satisfied with the overall quality of health care received, but confidence in the health system is eroding and two thirds of the public said the system needs some fairly major repairs (POLLARA Research, 2002). Recent reports 'officially' verify a shortage of general practitioners (FPs) (Canadian Medical Association, 1999) and 93 per cent of the medical profession perceives there to be physician shortages (POLLARA Research, 2002).

Articles published in the Winnipeg Free Press in 2002 echo this concern at the local level: "Calls inundate find-a-physician telephone line" (January 9, 2002) and "Burned-out physicians put pressure on Manitoba health care: Cure sought for family MDs" (February 1, 2002). This is in sharp contrast to what people were saying about supply one decade ago. Articles published in the Winnipeg Free Press in the early 1990s reflected concerns of an over-supply. Manitoba's Minister of Health as reported in the Winnipeg Free Press on July 31, 1992 when medical school enrolments were cut, "There are twice as many physicians serving the same numbers of people in Manitoba today versus 20 years ago." Results of a survey conducted by Angus Reid for the Canadian Medical Association, as described in the Winnipeg Free Press on June 22, 1993, "Almost half of physicians in Canada said enrolment in medical schools should be cut." That same day in 1993 the President of the Canadian Medical Association suggested "It will be possible to serve all areas with Canadian-trained physicians." But, how could shortages of FPs occur in 2000/01 when the FP to 100,000 Winnipeg population figure was 92 and the FP to 100,000 figure was 97 and 99 in 1992/93 and 1993/94 when supply was considered to be too high?

Policy-makers, administrators and health care providers across the country have responded to recent concerns by implementing initiatives to evaluate and address the supply and availability of FPs and restructure the organization and delivery of primary care. Health ministers have identified primary care reform as a priority and the federal government has made significant financial commitments toward improving primary care in Canada.

Federal and provincial governments alike have assembled committees, established commissions and invested in research to stimulate debate about important issues facing the primary care system and to make recommenda-

tions for reform. Should Manitobans coalesce around a vision for primary care reform in the province, the development of a plan and evaluation strategy for primary care reform should be guided by an understanding of where we have been, where we are and things learned along the way. The purpose of this report is to provide information to policy-makers, administrators, physicians and residents of Manitoba about the supply, availability and use of FPs⁴ in Winnipeg for the 10-year fiscal period 1991/92 to 2000/01. While Manitobans throughout the province may be concerned about access to FPs, this report focuses on the province's most populated urban community. Other reports published by the Manitoba Centre for Health Policy (MCHP) address issues of supply and use of physicians in other communities (Roos et al., 1996; Black et al., 1999). It is our hope that the information in this report will inform discussions about the status of FP services in Winnipeg and provide baseline measures toward which the future can be compared. Indeed, we also hope that our findings will stimulate discussions within other jurisdictions in Canada, as this report provides more detailed analysis than any other study regarding physician supply and practice patterns across a decade that started with cries of oversupply and ended with announcements of severe shortages.

1.1 Background

FP shortages or surpluses can be influenced by temporal changes in the relative need for physician services among the population, in the number of FPs in the labour market and/or patterns of practice that influence the availability of these practitioners to provide services to residents. And, the population's perception on whether they 'have' an FP may be influenced by turnover among physicians in the labour market. We address each of these determinants.

There has been an extraordinary improvement in the health of Winnipeg residents over the last number of years, as measured by a drop in premature mortality rates (PMR) (which is associated with population morbidity (Roos et al., 2001)) and an increase in life expectancy. In the period between 1990 and 1998, the premature mortality rate for Winnipeg declined 5.8 per cent; a substantial change for a large population. Not all Winnipeggers share the benefits of improved health. Researchers at MCHP have found that standardized mortality rates for males declined faster than for females (i.e., 7.7 versus 1.5 per cent, respectively) indicating that men have had larger improvements in their overall health than did women. An analysis of urban populations in Manitoba suggest that those in the lowest income quintiles had a 4.2 per cent decline in PMR between 1990 and 1998, while those in the highest income quintiles had a 18.6 per cent decline (Roos et al., 2001). Additionally, the PMR for residents of the 12 communities in the Winnipeg Regional Health Authority varied by more than a factor of two from the

⁴ Throughout this report, we use the term family physician (FP) to represent general and family practitioners.

healthiest (i.e., Fort Garry) to the least healthy (i.e., Point Douglas) (Frohlich et al., 2001).

While there may be improvements in health and, therefore, less overall need for 'curative' versus 'preventive' health services, there is reason to believe that other changes in the population may also influence aggregate demand for services. For example, the proportion of the population 65 years of age and over has increased and seniors tend to have more problems for which they seek services than other age groups. There is also emerging evidence that the prevalence of some chronic diseases, such as diabetes, may be on the increase (Blanchard et al., 1996; Hux et al., 2002).

A recent national report indicated that Manitoba ranked 6th among the 13 Canadian provinces and territories in 2000 in terms of the FP and specialist to population measure of supply.

Federal documents suggest that the number of specialists and FPs in Manitoba, as well as physician to population ratios, have remained relatively stable over the last 10 years. In fact, a recent national report indicated that the province ranked sixth among the 13 Canadian provinces and territories in 2000 in terms of the FP to population measure of supply and sixth in terms of the specialist to population ratio. In comparison to other Western provinces, Manitoba ranks ahead of Alberta, similar to Saskatchewan and lower than British Columbia on this measure of FP supply (Chan, 2002a). But, interprovincial and temporal comparisons on the basis of head counts and physician to population ratios assumes that there are no regional or temporal differences in labour force participation rates, levels of workforce productivity, and overall need for physician services. In addition, if there was acceleration in FP turnover in recent years, Winnipeggers may increasingly feel they don't 'have' an FP despite stable or increasing physician to population ratios.

Not all FPs provide primary care services to residents, as some physicians hold administrative positions, conduct research, engage in teaching, or take leaves of absence. Not all FPs are equal in terms of their workloads, as some provide primary care services to residents on a full-time, part-time or limited basis. Not all FPs provide the full range of services typically associated with 'family physicians', as some elect to specialize in areas such as sports medicine, eye care, skin care, etc. In addition, there are certain characteristics, such as the gender and age of physicians, which are known to influence their volume and type of work. Insofar as these workforce characteristics change over time, the availability of FPs to provide primary care services to Winnipeggers may be altered, despite stable or increasing physician to population ratios.

The extent to which changes in the population's need for FPs, the supply and turnover rates of these practitioners, and their availability to provide primary care services to Manitobans (Winnipeggers in particular) is only beginning to be understood. Survey research and anecdotal evidence, however,

suggests there may be cause for concern. In 2001, the College of Family Physicians of Canada estimated that one-third of family physicians in Manitoba felt that there was insufficient supply of family practitioners; and half of family physicians in the province reported that availability of their services was poor due to the fact that family physicians in their communities were not accepting new patients. Indeed, eight per cent of family physicians in Manitoba reported they were no longer accepting new patients in 2001 (College of Family Physicians of Canada, 2001).

In 2002, Manitoba Health and the Manitoba College of Family Physicians joined forces to connect residents with an FP willing to accept new patients. The service has proven to be extremely popular judging by the high number of telephone calls.

In 2002, Manitoba Health and the Manitoba College of Family Physicians responded to public perceptions of reduced availability of FPs in Winnipeg by joining forces to connect residents with an FP willing to accept new patients. The volume of telephone calls for this service was so high that additional staff needed to be in place and some physicians have asked to be removed from the list (Winnipeg Free Press, 2002). Why is it that some FPs are not willing to accept new patients? Why is it that Winnipeggers reacted in this way when Manitoba's physician to population ratios are 'on par' with other regions in Canada? This report seeks to inform these issues by addressing the following research questions:

- Did the rate at which Winnipeggers use FPs go up or down over time?
- Did vulnerable populations receive more or less services than groups considered less at-risk of needing care?
- Did vulnerable populations use more or less services over time, that is, "where rates have changed, do they make sense?"
- Did Winnipeggers see a greater number of different FPs to receive the care they seek?
- Did the supply of Winnipeg FPs go up or down over the past decade?
- Are more or less FPs leaving and entering the labour market over time?
- Have the characteristics of Winnipeg FPs changed over time in ways that may contribute to a decrease in their availability to provide services?
- Have the workloads of Winnipeg FPs gone up or down over time? And, is this different for different groups of FPs?

2.0 METHODS

2.1 Winnipeg Residents and Winnipeg FPs

This study focused on the population residing in the geographic region that is now the Winnipeg Regional Health Authority (hereinafter called Winnipeg residents), and FPs for whom the majority of the people they saw were Winnipeg residents (hereinafter called Winnipeg FPs). Figure 2.1 illustrates the Winnipeg Regional Health Authority and the community areas within this area.

Figure 2.1: Map of Winnipeg Regional Health Authority Community Areas



Measures of service utilization were derived from administrative billing data reflecting encounters between Winnipeg residents and any FPs in the province from fiscal 1991/92 to 2000/01. We measured utilization by Winnipeg residents irrespective of the geographic location of the physician who provided care, and all analysis for Winnipeg residents included people who lived in personal care homes. Measures of physician supply pertaining to Winnipeg FPs were derived from administrative billing data from encounters between these physicians and any person, irrespective of whether the patient was a Winnipeg or Non-Winnipeg resident. Thus, we measured supply of services provided by Winnipeg physicians irrespective of the geographic home residence of the patient who received care.

During any one year between 1991/92 and 2000/01, approximately 15 per cent of patients who saw Winnipeg FPs were from jurisdictions outside of the city, and accounted for about 10% of their total services provided.

During any one-year period between 1991/92 and 2000/01, approximately 15 per cent of the patients who saw Winnipeg FPs were from jurisdictions outside of the city. Visits to Winnipeg FPs by Non-Winnipeg residents accounted for approximately 10 per cent of the total number of services provided by these practitioners in any single year. Therefore, supply side measures primarily reflect care given to Winnipeg residents and the availability of Winnipeg FPs to serve Winnipeggers did not change over time due to shifts in the number of Non-Winnipeggers who sought care nor the volume they received from Winnipeg FPs.

All measures in this report were derived from electronic data and paper claims that were submitted to Manitoba Health by FPs who billed on a fee-for-service basis or by FPs who received salary remuneration and submit 'evaluation claims' for services provided. Administrative data are not available for the very small number of FPs who received salary remuneration but did not submit evaluation claims. While the number of salaried FP is small, it has increased over time. Insofar as some of these practitioners may not submit evaluation claims, we would underestimate supply and utilization in more recent periods. Data derived from an FP who provided ambulatory care services in either of the two largest emergency departments (i.e., St. Boniface General Hospital and Health Sciences Centre) or at any of the community clinics in Winnipeg are included in our analyses. Administrative data regarding services provided by FPs in the remaining emergency departments do not exist.

The size of the Winnipeg population remained stable at approximately 650,000 between 1990/91 (n=653,452) and 2000/01 (n=654,930). But, the proportion of the population that were young declined (i.e., 15 per cent decline), as did the population of young adults (i.e., 10 per cent decline). Conversely, the size of the adult population 45 to 64 years or 65 or more years grew (i.e., 24 and seven per cent increase, respectively). Figures 2.2 and 2.3 illustrate changes in the male and female Winnipeg population by age category.

Figure 2.2: Per Cent Winnipeg Female Resident Population, 1991/92 and 2000/01

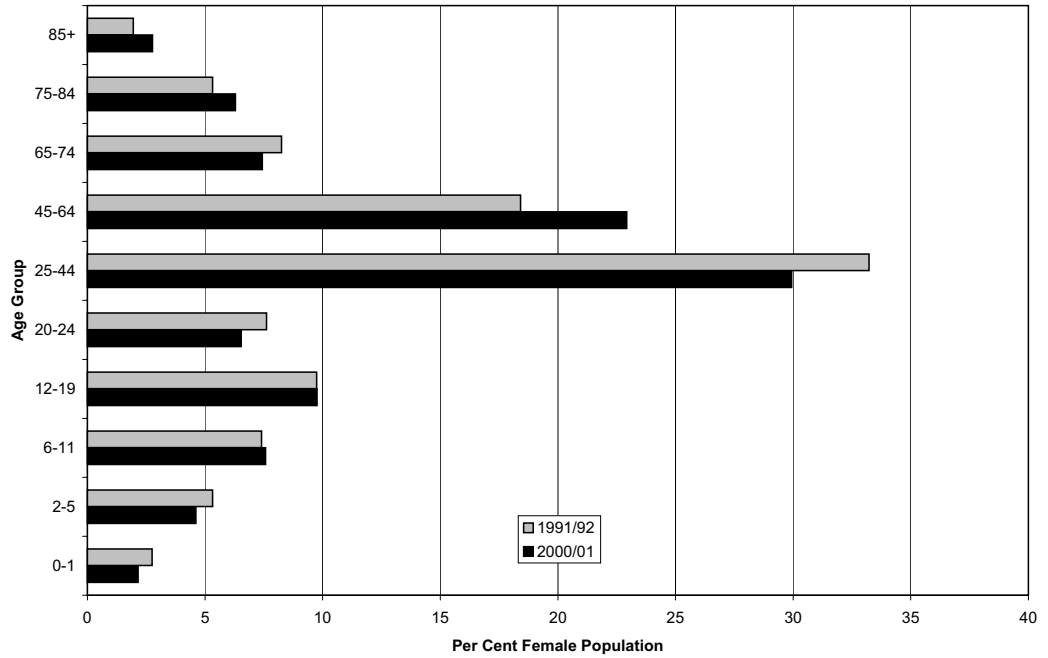
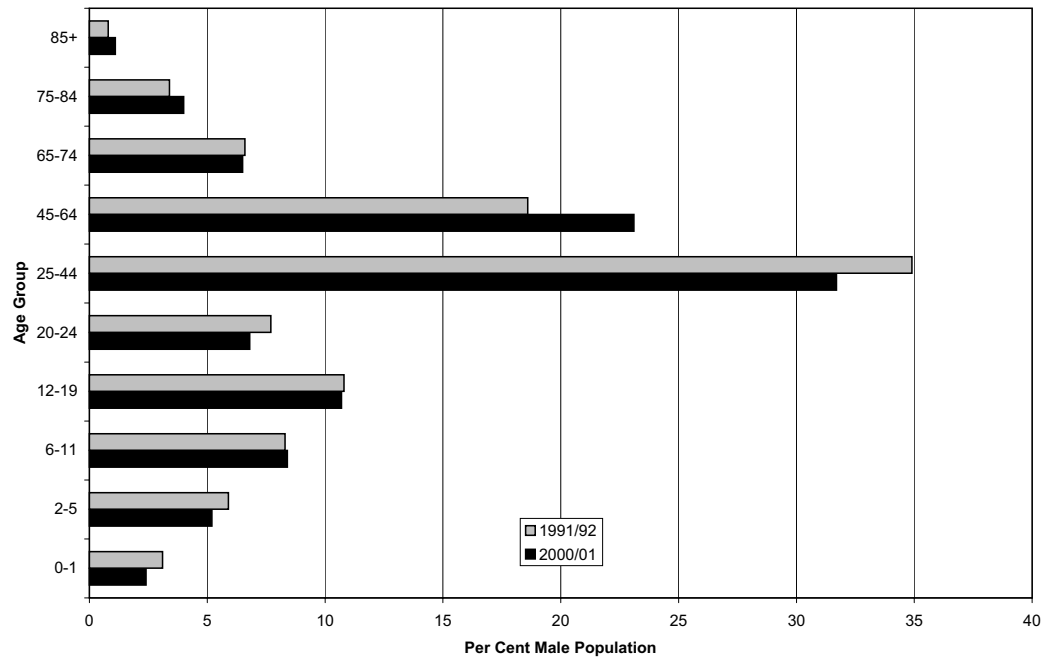


Figure 2.3: Per Cent Winnipeg Male Resident Population, 1991/92 and 2000/01



2.2 Measures of Utilization

Due to temporal changes in the age and gender structure of the Winnipeg population and the finding that some age segments of the population visit physicians more or less often than others, steps were taken to ensure temporal comparability of measures of physician utilization despite demographic shifts. That is, to address the question "Did the rate at which Winnipeggers used FPs go up or down over time?" all indicators of change in service utilization were standardized (direct rates) to the age and gender structure of Winnipeg residents in 1991/92. Standardized and crude rates are included in Appendix A and B, respectively. Two measures of FP utilization are used in this report: the percentage of Winnipeg residents who visited an FP during the course of one year, and the average number of times in any one year a Winnipeg resident visited an FP. An ambulatory physician visit is defined as any contact with a physician that occurs while the patient is not a hospital inpatient. Physician visits to residents of personal care homes are counted as ambulatory visits. See Appendix D for details.

Defining and measuring need for primary care and the optimal number of physicians is problematic, as it relies on judgements about the effectiveness of care and capacity to benefit from care. It has been proposed, however, that it is worthwhile to answer the questions "Do vulnerable populations receive more or less services than groups considered less at-risk of needing care?" and "Do vulnerable populations use more or less services over time?"

In order to examine whether services provided by FPs were directed toward those with more needs, measures of utilization were calculated for vulnerable segments of the population such as the young and oldest old, as well as people with diabetes, hypertension or mental conditions.

In order to examine whether services provided by FPs were directed toward those with more needs, measures of utilization were calculated for vulnerable segments of the population such as the young and oldest old, as well as people with diabetes, hypertension or mental health conditions. We also calculated utilization measures by individuals during the year preceding their death and by individuals who were admitted to a personal care home during the year preceding their admission. Our assumption was that these individuals would have been at higher risk of needing care prior to these events. Appendix D describes the process undertaken to identify people with these characteristics.

Previous research has shown that residents of some Winnipeg communities have poorer health status than those who live in other areas of the city. For example, residents of Point Douglas have premature mortality rates that are 2.2 times higher, and cancer incidence rates that are 1.3 times higher than residents of Fort Garry (Frohlich et al., 2001). Premature mortality rates are one of the most powerful measures of a population's health (Cohen and MacWilliam, 1995) and they are highly associated with levels of community morbidity, as measured by treatment prevalence of chronic illness in

Winnipeg (Frohlich et al., 2001). Therefore, measures of FP use were also calculated for Winnipeg communities that vary in this measure of health.

Socioeconomic status is a strong predictor of health status and levels of morbidity, as those in lower status groups generally have poorer health than those in higher status groups. Statistics derived from Census 1991 and 1996 were used to measure socioeconomic status in small geographic areas called enumeration areas. These areas have an average of 740 Winnipeg residents. We used the median household income of Winnipeg residents in each enumeration area and derived income quintiles and calculated utilization measures for these socioeconomic groups (See Appendix D).

We used three approaches to assess the question "Did Winnipeggers have to see more and more different FPs to receive the care?" To do this, we measured the number of different FPs seen by residents during a time period and calculated these measures for the vulnerable sub-populations. Next, we assessed temporal trends in the number of different family physicians seen annually by patients who were medium (i.e., two to five visits per annum), high (i.e., six to nine visits per year) or intense users (i.e., 10 or more visits per annum). Lastly, we assessed temporal differences in the number of different FPs seen over the course of a three-year term by Winnipeg residents. We assumed, prospectively, that Winnipeg residents would see more and more different practitioners over time, if residents increasingly did not 'have' an FP from whom they routinely sought care. We would agree that this indicator is not a robust measure of continuity of care per se.

2.3 Measures of Supply and Availability

To address the question "Has the supply of Winnipeg FPs gone up or down over time?", a number of traditional measures of supply were used. We report head counts and the number of full-time equivalents (FTE) and calculated physician to population and population to physician ratios. FTEs are workload values that rank physicians relative to their peers on the basis of the size of their annual billings. To assess labour force participation, we counted the number of FPs who were eligible to bill and the number of FPs who actually billed Manitoba Health, as well as the number who worked part-time (i.e., FTE less than one) or full-time (i.e., FTE of one or more). Appendix C provides numerous measures of physician supply and availability, and Appendix D provides technical definitions of terms and the methods used to calculate FTEs and workload measures.

When Winnipeg FPs stop providing services, because they retire, move or exit the profession for other reasons, residents who would identify this practitioner as their 'family physician' must find another physician when they seek care. If the number of FPs who stopped providing services in any one

year remained stable across time, one would expect that approximately the same number of residents in any one year would have to search for another FP. Or, increases over time in the number of FPs who stop providing services would result in increases in the number of different residents who must find another FP. And, temporal changes in the number of residents who have to find a new FP, because their physician was no longer offering care to Winnipeggers, could result in temporal changes in perceptions regarding levels of satisfaction with the supply of FPs. Therefore, we assessed patterns of workforce turnover to assess the question "Are more or less FPs leaving and entering the labour market over time?" We calculated turnover rates as described in Appendix D.

To assess the question "Did the characteristics of Winnipeg FPs change over time in ways that may contribute to changes in their availability to provide services?" we conducted an analysis of temporal changes in the age and gender structure of physicians, as well as the scope of their practice. Recent evidence suggests that the gender and age structure of the physician workforce may influence available supply and workloads (Chan, 2002a; Woodward and Hurley, 1995). And, FPs in other jurisdictions are reducing the comprehensiveness of the services offered (Bass et al., 1998; Chan, 2002b).

The proportion of women in the FP workforce was calculated for each fiscal year and temporal changes assessed. To determine whether workload differences exist between male and female FPs, an area of interest to planners should the workforce become more populated with female FPs, we measured average workloads of female FPs in each time period. Next, we calculated the average age of FPs and counted the number of FPs in different age categories. To estimate the impact of an aging workforce, we first measured the productivity of FPs (i.e., visits per annum) of different age categories in 1991/92. These values were then used to calculate expected changes in workforce productivity as a function of changes in the age structure of the workforce. To assess intergenerational or temporal differences in productivity, we measured average workloads of FPs of different age categories in 1991/92 through 2000/01. In order to track life cycle changes in productivity, we tracked workloads of FPs across time, stratified by age.

Recent survey research suggests that there are a number of Winnipeg FPs who focus their practice in areas of special interest and do not provide the full range of ambulatory care services typically associated with FPs who might be called "family physicians" (Kirk, 2001). Therefore, we assessed for temporal changes in the mix of FPs to investigate whether temporal changes in scope of practice had not changed in ways that would reduce the availability of FPs who provide a wide array of services to the general public. First, we identified physicians who focused their practice on serving inpatients and visits to patients in personal care homes and/or assisting in surgi-

cal procedures. Then, we classified all remaining full-time FPs (i.e., FTE equals one or more) as:

- Full-scope FPs - physicians who provided services directed at a wide array of diagnostic conditions, or
- Focused-scope FPs - physicians who restricted their practice or otherwise served special populations by virtue of the presence of a limited number of diagnostic conditions served or an atypical balance among diagnostic conditions.

The proportion of full-time FPs in each of these two groups were calculated to assess temporal changes in the mix of FPs who provide ambulatory care. Appendix E provides more technical definitions of this classification scheme and details the methods used to classify FPs.

Newly developed measures of workload were used to better understand temporal shifts in workloads from the perspective of physicians.

To address the question "Did the workloads of Winnipeg FPs go up or down over time?" we used both traditional (i.e., FTE per FP, visits per annum) and newly developed (i.e., visits per full-time workday per FP, full-time days per FP per annum, visits per annum) measures. The nature of the algorithm used to calculate FTE uses logarithm values (see Appendix D for technical definitions), and, therefore, does not enable one to intuitively understand the magnitude of temporal changes in FTE. For example, a 10 per cent increase in FTE is not equal to a 10 per cent increase in workload. Therefore, we used the newly developed measures of workload to better understand temporal shifts in workloads from the perspective of physicians (See Appendix D). These new measures do not rely on a full-time-equivalent algorithm. As illustrated in Appendix D, these measures are highly correlated. Workload analyses were calculated for part-time and full-time FPs and for the cohort of physicians who worked exactly one full-time equivalent.

3.0 USE OF FPs BY WINNIPEG RESIDENTS, 1991/92 - 2000/01

During 2000/01, approximately 74.6 per cent of Winnipeg residents visited a Winnipeg FP, and residents visited an average of 3.49 times.

Between 1991/92 and 2000/01 the proportion of residents who visited a Winnipeg FP declined one per cent, and visit rates declined three per cent.

During 2000/01, 62.9 and 62.5 per cent of children and adolescents, respectively, visited an FP and visited 2.39 and 1.83 times. These rates were significantly lower in comparison to 1991/92.

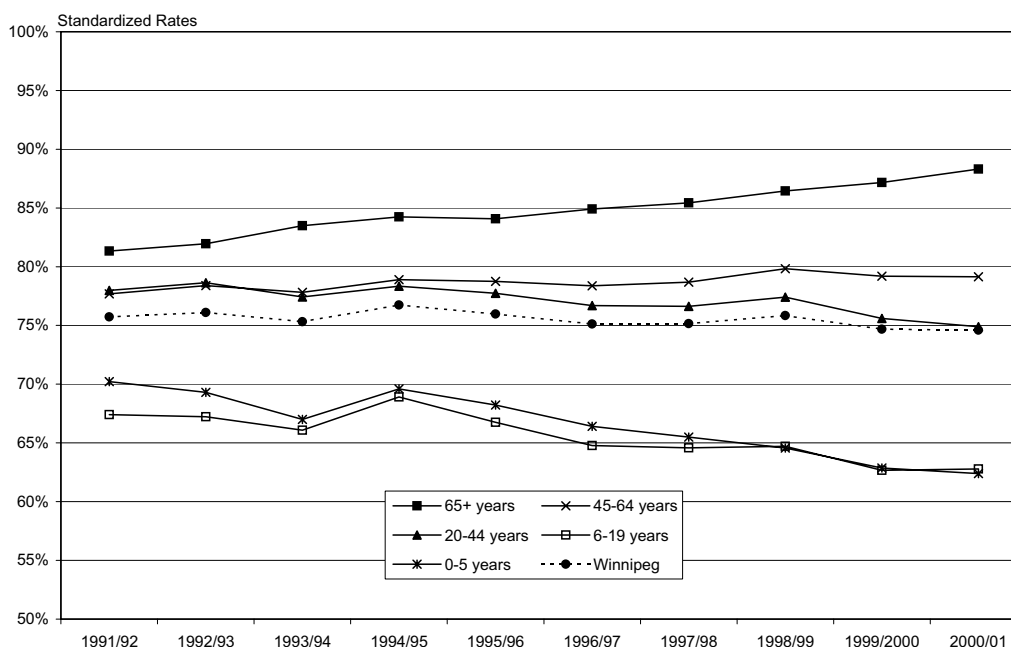
3.1 Use of FPs by Winnipeg Residents

During 2000/01, approximately 74.6 per cent of Winnipeg residents visited a Winnipeg FP and residents visited an average of 3.49 times. After accounting for demographic changes in the population of Winnipeg residents over the decade, we estimated a slight decline in utilization. A standardized⁵ measure of the proportion of residents who visited a Winnipeg FP declined one per cent and a standardized measure of visit rates declined three per cent between 1991/92 and 2000/01. As will be shown, however, changes in visit patterns varied markedly over time for some age groups. Rates of contact for some groups such as the young were down substantially, while those of others, particularly seniors, increased. Standardized and crude rates for Winnipeg residents are provided in Appendix A and B, respectively.

3.2 Use of Family Physicians, by Age Category

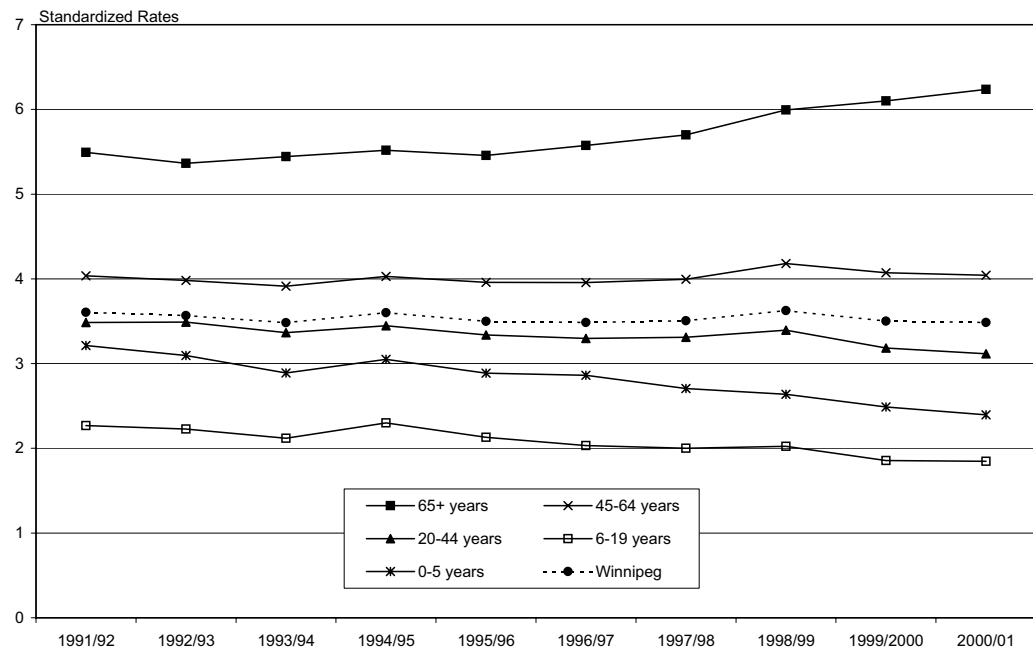
The age characteristics of Winnipeg residents who use FPs have changed. During 2000/01, 62.9 and 62.5 per cent of children and adolescents, respectively, visited an FP and visited approximately 2.39 and 1.83 times. These young people were less likely to visit and to visit less often in 2000/01 in comparison to 1991/92. We calculated significant declines in both of these measures of FP utilization as illustrated in Figure 3.1 and Figure 3.2. Standardized visit rates among those less than five years of age declined 25.5 per cent and these rates among individuals six to 19 years declined 18.6 per cent over the period.

Figure 3.1: Per Cent of Winnipeg Residents Who Visited an FP at Least Once, by Age Category, 1991/92 - 2000/01



⁵ All direct standardized rates are age- and gender-adjusted to the population structure in 1991/92.

Figure 3.2: FP Visits per Winnipeg Resident per Annum, by Age Category, 1991/92 - 2000/01



During 2000/01, 88.5 per cent of seniors 65 years of age and over visited an FP, and averaged 6.28 visits. These rates were 8.6 and 13.5 per cent higher, respectively, in comparison to 1991/92.

Seniors 65 years of age and over accounted for 20.3 per cent of all FP encounters in 1991/92, although representing only 13.2 per cent of the population. By 2000/01, this group accounted for 25.5 per cent of all encounters, although representing only 14.1 per cent of the population.

During 2000/01, 74.7 per cent of young and middle age adults visited an FP at least once and averaged 3.10 visits per year. These adults were less likely to visit in 2000/01 in comparison to 1991/92 (Figure 3.1). Standardized visit rates declined (i.e., 10.7 per cent) among adults aged 20 to 24 years, and declined less dramatically (i.e., 7.7 per cent) among adults age 25 to 44 years (Figure 3.2). During 2000/01, 79.1 per cent of adults from 45 to 64 years visited an FP at least once and averaged 4.04 visits. Measures of service use among this group of adults remained relatively unchanged since 1991/92.

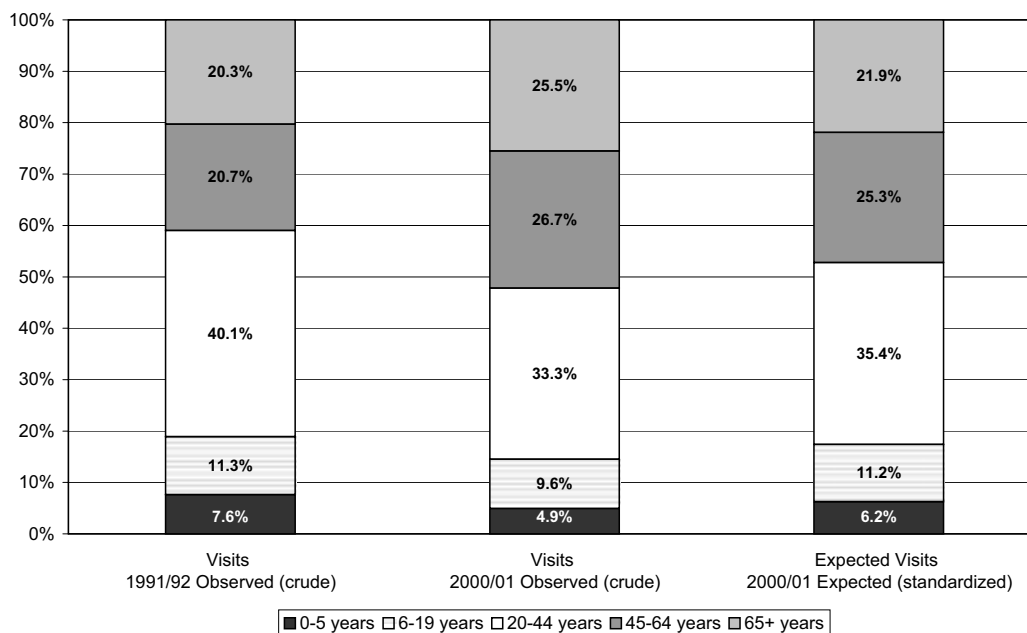
During 2000/01, 88.5 per cent of seniors 65 or more years of age visited an FP and averaged 6.28 visits per year. Seniors were more likely to visit and to visit more often in 2000/01 in comparison to 1991/92, as evidenced by increases in standardized measures of the proportion who visited and visit rates (i.e., 8.6 and 13.5 per cent, respectively).

Between 1991/92 and 2000/01, the proportion of total encounters between Winnipeg residents that were 65 or more years of age and FPs increased substantially. By 2000/01, one in every four encounters was with a senior. Seniors 65 or more years of age accounted for 20.3 per cent of all FP encounters in 1991/92, although they represented only 13.2 per cent of the population. This is not surprising, however, as illness and utilization of services are associated with age. By 2000/01, this group accounted for 25.5 per

cent of all encounters although they represented only 14.1 per cent of the population in 2000/01.

The first and second stacked bars in Figure 3.3 illustrate the proportion of total encounters between Winnipeg residents attributable to different age groups. The proportion of encounters between residents and FPs attributable to children and adolescents declined from 18.9 per cent in 1991/92 to 14.5 per cent in 2000/01. And, the proportion of encounters between adults from 20 to 44 years declined from 40.1 to 33.3 per cent over the same period. Conversely, the proportion of encounters attributable to adults from 45 to 64 years increased from 20.7 to 26.7 per cent. And, the proportion of encounters attributable to seniors increased from 20.3 per cent to 25.5 per cent.

Figure 3.3: Proportion of Total FP Visits, by Age Category of Winnipeg Population, 1991/92 and 2000/01, Observed and Expected



The increase in the 'greyness' of encounters appears to be more of a function of increases in visits per senior rather than growth in the size of the senior population. A comparison between the second and third stacked bars in Figure 3.3 illustrates this point. If seniors 65 years of age and over had received services from FPs in 2000/01, as they did in 1991/92, we would expect this population to be responsible for 21.9 per cent of all encounters in 2000/01 due to demographic changes in the age and gender structure of the Winnipeg population. However, the observed increase in the proportion of encounters attributable to seniors is much higher than expected (i.e., 25.5 per cent of encounters in 2000/01, rather than the 21.9 per cent expected).

The difference between observed and expected is related to the increase in visits per senior rather than demographic changes.

The proportion of visits attributable to adults age 45 to 64 was also higher than expected (i.e., 26.7 per cent of encounters in 2000/01, rather than the 25.3 per cent expected), and is related to increases in visits per older adult rather than growth in the size of the population.

3.3 Use of Family Physicians, by Gender

Gender is also a determinant of how often a person uses FP services; and rates of use by males and females have changed over time. In 2000/01, 79.1 per cent of females visited an FP at least once and females visited 3.96 times per year, on average. During this same fiscal year, 69.9 per cent of males visited an FP at least once and males averaged 2.99 visits per year. Over the past decade, the proportion of women who visited and visit rates declined slightly (i.e., 2.7 per cent decline in likelihood of visits; 7.9 per cent decline in standardized visit rates) and most of this decline happened in the later three years. The proportion of men who visited and visit rates also declined slightly. Interestingly, the premature mortality rate for males declined at a faster rate than females (i.e. 7.7 versus 1.5 per cent, respectively) indicating that men had larger improvements in their health than women between 1990 and 1998.

In 2000/01, children less than one year visited 3.01 times per annum, on average, while children two to five years of age visited 2.11 times, and children six to 11 years visited 1.59 times. This measure of utilization declined significantly since 1991/92, as evident by a decline of 27.2, 22.9 and 14.9 per cent per age category in visit rates.

3.4 Use of Family Physicians, by Vulnerable Winnipeg Populations

While some groups in the population may make more or fewer visits to FPs over time, it is important to understand whether those who are making fewer visits are members of high-risk vulnerable populations—acknowledging that it is difficult to determine what amount of care is optimal for any group. We assessed utilization of FPs by vulnerable populations such as the very young and very old residents, those treated for chronic diseases or mental health conditions, as well as other identifiable subpopulations.

3.4.1 Use of Family Physicians, by the Young and the Oldest Old

By 2000/01, 62.4 per cent of children 0 to 12 years of age visited an FP, down from 70.3 per cent in 1991/92.⁶ The proportion of children who visited an FP was down approximately 11.1 per cent over the past 10 years, as measured using age-specific standardized rates (Figure 3.4). In 2000/01, children less than one year visited 3.01 times per annum, on average, while children two to five years of age visited 2.11 times, and children six to 11 years visited 1.59 times. This measure of utilization declined significantly

⁶ These values are crude per cents. Figure 3.4 reports standardized values.

since 1991/92, as evident by a decline of 27.2, 22.9 and 14.9 per cent per age category in visit rates.

By 2000/01, 94.5 per cent of the oldest old (i.e., seniors 85 years or older) visited an FP at least once, up from approximately 85.1 per cent in 1991/92. During this period, the proportion of seniors 65 years or older who visited were, as expected, slightly lower than those 85 years or older. In 2000/01, the oldest old visited approximately 7.96 times per annum, on average, while those 65 or older visited an average of 6.28 times. This measure of use among the oldest old declined slightly in comparison to 1991/92, but increased approximately four per cent over the last three-year period. Figures 3.4 and 3.5 illustrate standardized measures of the proportion who visited and visit rates for the young and oldest old, and include adolescent, senior and Winnipeg population profiles for reference purposes.

Figure 3.4: Per Cent of Winnipeg Residents Who Visited an FP at Least Once, by Age Category, 1991/92 - 2000/01

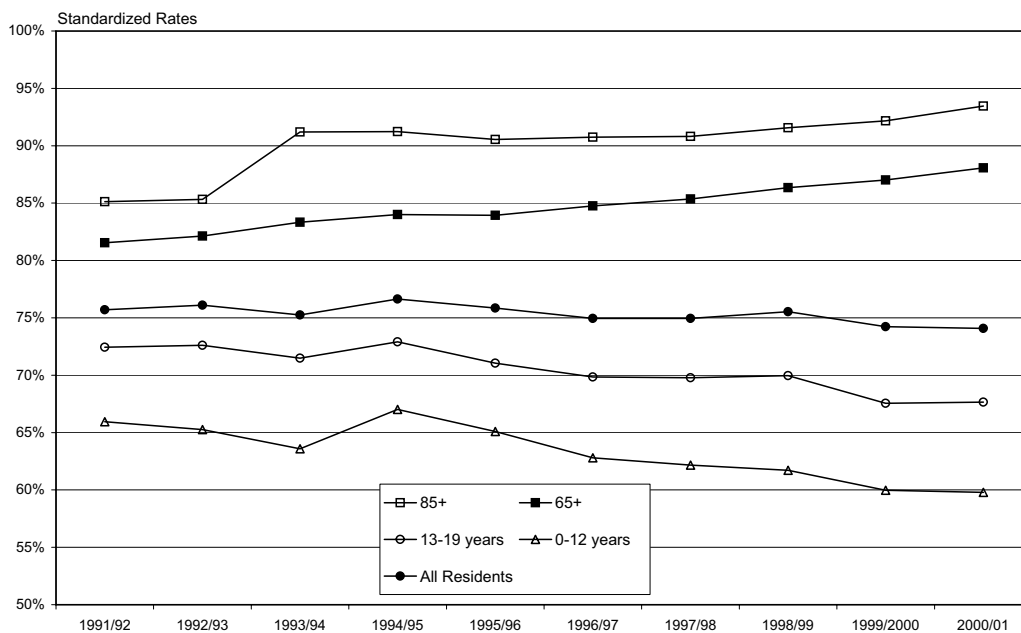
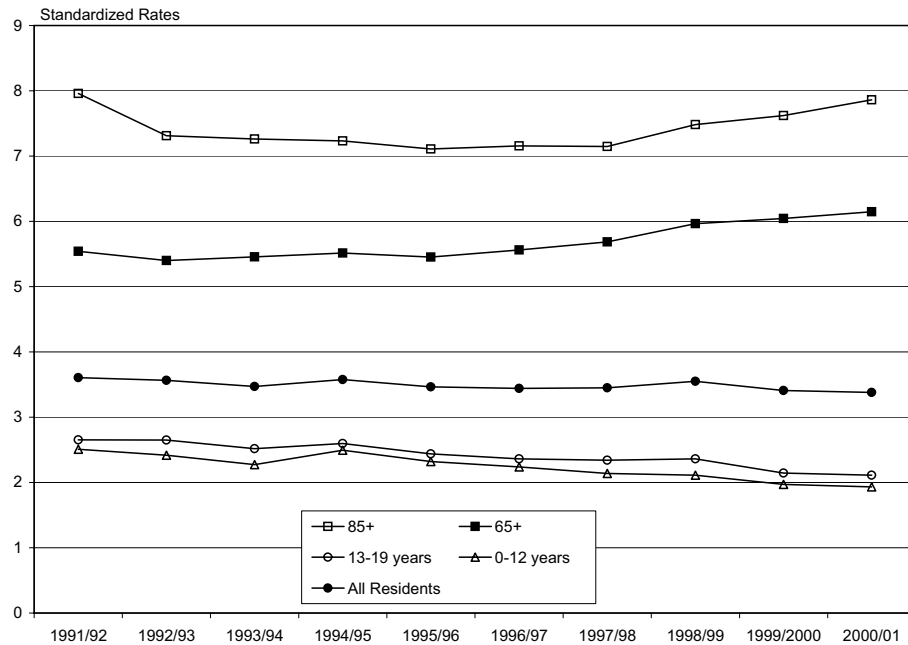


Figure 3.5: FP Visits per Winnipeg Resident per Annum, by Age Category, 1991/92 - 2000/01



Children did not visit FPs less often because they saw paediatricians or other specialists more often.

Changes in the utilization of FP services by children (i.e., 12 years or less) or by the oldest old (i.e., 85 years or older) do not seem to be because these residents visited another type of physician any more or less over the term. That is, children did not visit FPs less often because they saw paediatricians or other specialists more often. Seniors 85 or more years of age did not visit FPs more often because they saw specialists less often. Figures 3.6 and 3.7 summarize visit rates for these populations, by type of physician. Notice that temporal changes in physician service utilization per child were a function of reductions in use of FPs and, to a lesser extent, specialists. Temporal patterns of use of FP and specialists by the oldest old were relatively stable. In 2000/01, the oldest-old visited FPs four times as often as children. Younger populations of seniors, however, used FPs more but specialists less between 1991/92 and 2000/01.

Figure 3.6: Physician Visits per Winnipeg Resident Less than 12 Years of Age, by Type of Physician, 1991/92 - 2000/01

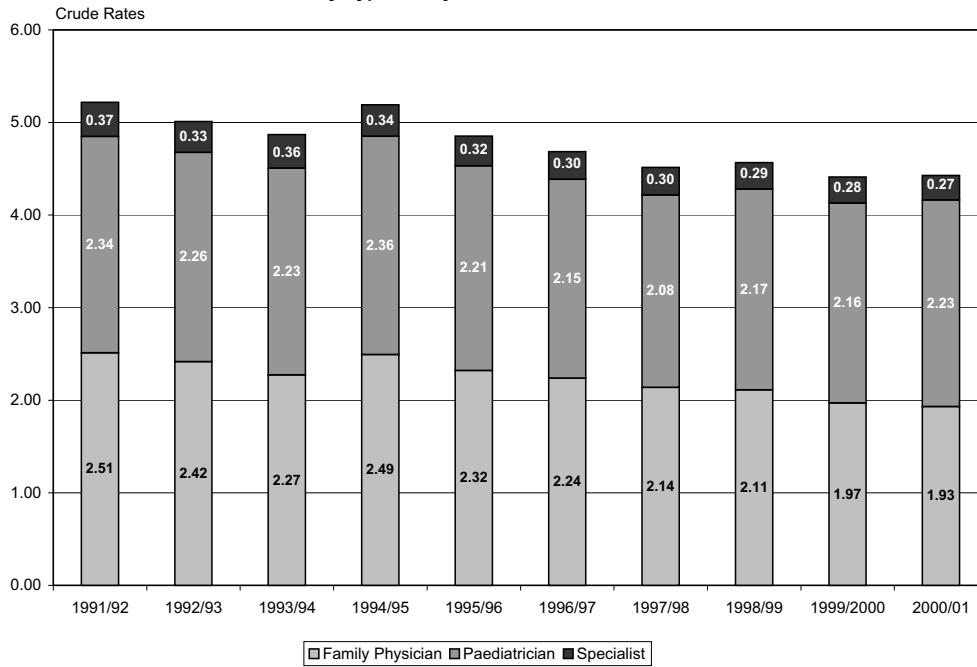
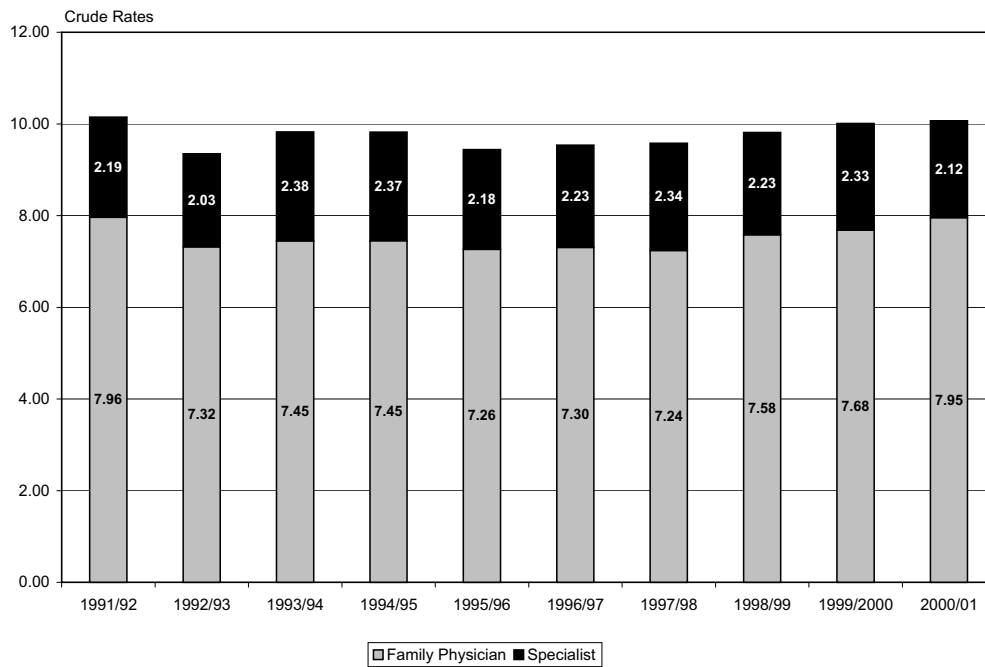


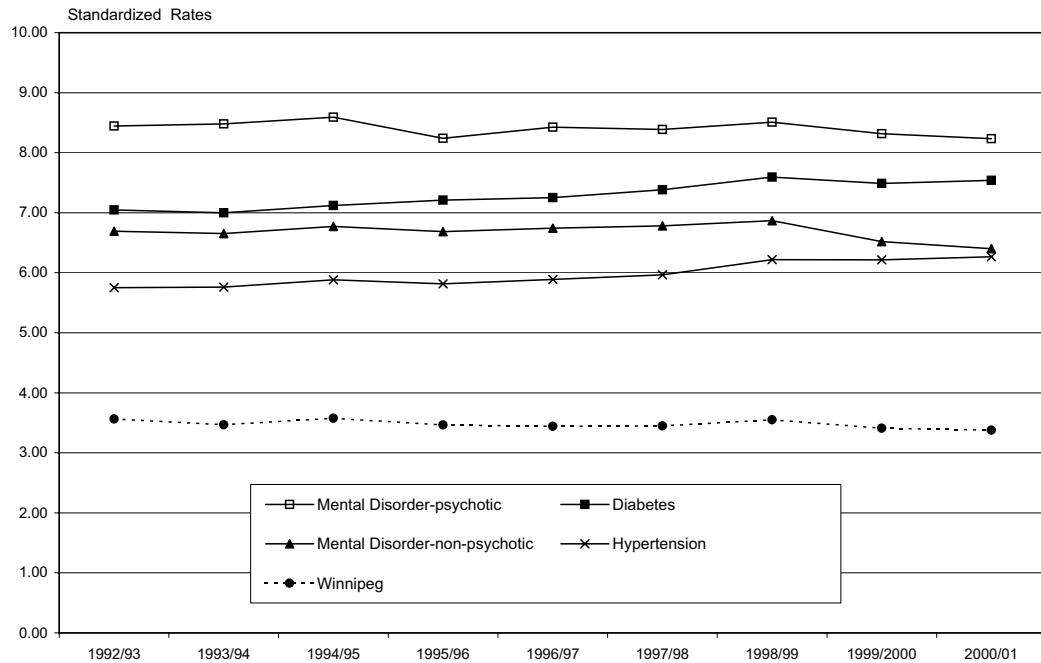
Figure 3.7: Physician Visits per Winnipeg Resident 85+ Years of Age, by Type of Physician, 1991/92 - 2000/01



3.4.2 Use of Family Physicians, by Populations with Chronic or Mental Health Conditions

As illustrated in Figure 3.8, standardized rates of visits per resident treated for specific health conditions remained relatively stable between 1992/93 and 2000/01.

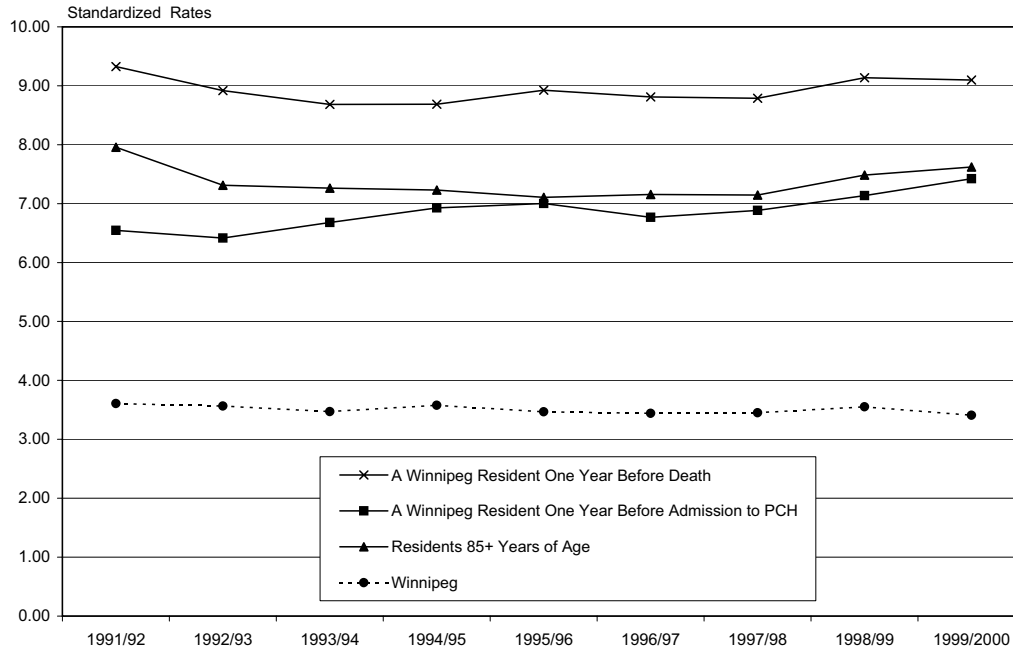
Figure 3.8: FP Visits per Winnipeg Resident per Annum, by Health Condition, 1992/93 - 2000/01



3.4.3 Use of Family Physicians, by Vulnerable Population in Year Before Personal Care Home Entry or Death

Winnipeg residents who were admitted to a personal care home in 2000/01 visited an FP approximately 7.40 times, on average, during the year before their admission (i.e., 1999/2000). As illustrated in Figure 3.9, standardized visit rates among this population increased by 13.4 per cent over the course of nine years. By comparison, residents who died in 2000/01 visited an FP 9.10 times, on average, during the year before death (i.e., 1999/2000). Standardized visit rates among this population declined slightly since 1991/92.

Figure 3.9: FP Visits per Winnipeg Resident per Annum, by Vulnerable Population, 1991/92 - 1999/2000



In 2000/01, 77.5 per cent of residents of the least healthy community in Winnipeg (Point Douglas), as measured by premature death, visited an FP at least once, averaging 4.28 visits; by comparison 72.8 per cent of residents of the healthiest community (Fort Garry) visited at least once averaging 2.98 visits.

3.5 Use of Family Physicians, by Level of Population Need

Winnipeg residents, who live in the least healthy communities, as measured by rates of premature death, are more likely to visit an FP than residents in healthier areas and to visit more often (Figures 3.10 and 3.11). For example, 77.5 per cent of residents of the least healthy community in Winnipeg (i.e., Point Douglas) visited an FP at least once in 2000/01, and residents from this community averaged approximately 4.28 visits. During the same fiscal year, 72.8 per cent of residents in the healthiest community (i.e., Fort Garry) visited an FP, and residents from this area visited approximately 2.98 times, on average.

Most Healthy:	Fort Garry, Assiniboine South, St. Vital, St. Boniface
Average Health:	River Heights, Seven Oaks, St. James-Assiniboia, River East
Least Healthy:	Transcona, Inkster, Downtown, Point Douglas

Figure 3.10: Per Cent of Winnipeg Residents Who Visited an FP at Least Once, by Population Health Status, 1991/92 - 2000/01

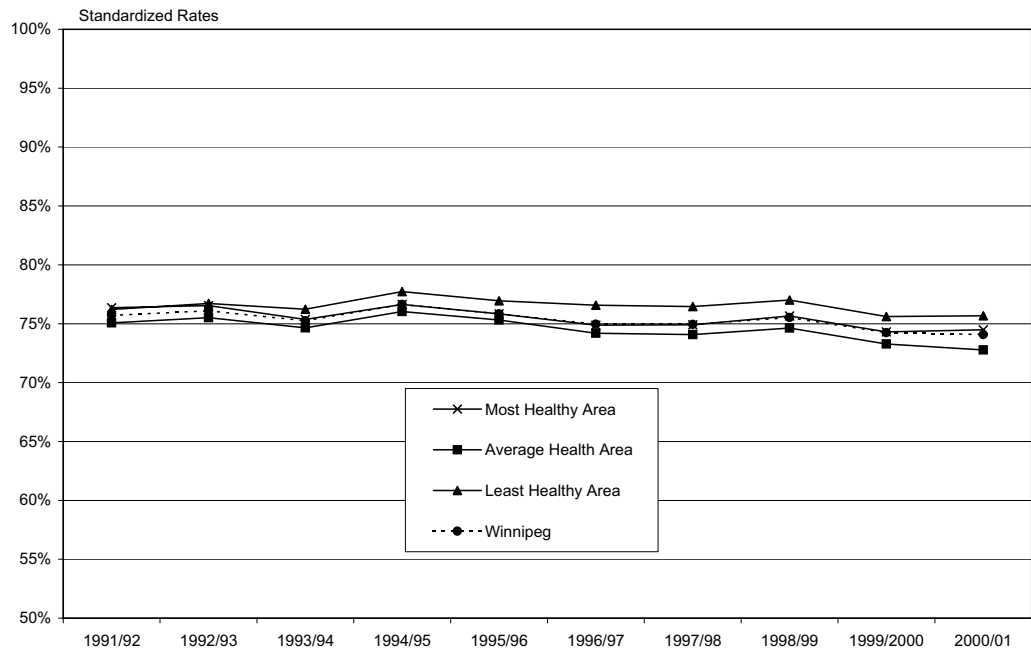
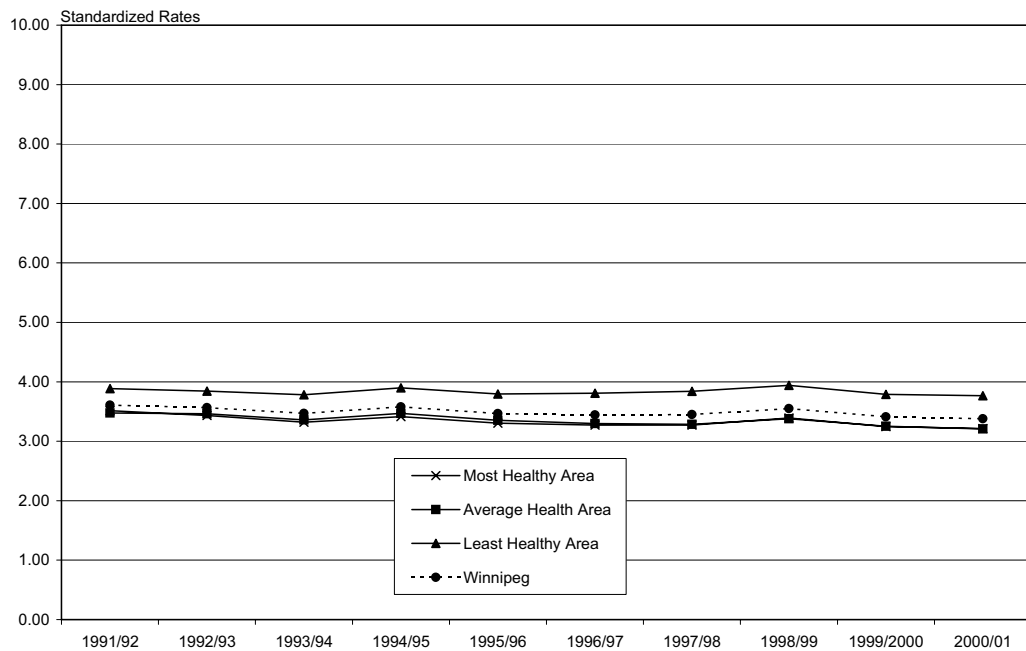


Figure 3.11: FP Visits per Winnipeg Resident per Annum, by Population Health Status, 1991/92 - 2000/01



When we looked at the overall pattern of how FP visits were delivered to people in Winnipeg, it appears that individuals in communities known to need more care received more care and that changing patterns of use reflect changing patterns of health. That is, standardized rates indicate that resi-

Between 1991/92 and 2000/01 visit rates for residents in the healthiest Winnipeg community declined 8.5 per cent, 7.7 per cent in average communities and 2.3 per cent in the least healthy community.

dents of the least healthy communities were slightly more likely to visit an FP in 2000/01 as 1991/92 and to visit more often. Conversely, residents of the healthiest communities are less likely to visit a Winnipeg FP in 2000/01 in comparison to 1991/92 and to visit less often. Over the period, visit rates among individuals who reside in the healthiest community declined 8.5 per cent, rates among individuals who reside in average health communities declined 7.7 per cent and rates among individuals from the least healthy community declined 2.3 per cent.

The slope of the relationship between socioeconomic status and use of Winnipeg FPs changed from 1991/92 to 2000/01, in that the gradient in service use appears closer in alignment with the gradient in socioeconomic status. That is, the rate of visits by residents in the low-income quintile increased and the rate of visits among those who live in the highest income area declined. The rate of increase in visits among low-income communities was less than the rate of decline in visit rates among higher income areas. Interestingly, the largest rate of decline in use of Winnipeg FPs was among lower and upper middle income groups rather than the highest income group. Table 3.1 illustrates levels of service intensity among residents of Winnipeg who varied in their socioeconomic status.

Table 3.1: FP Visits per Winnipeg resident per year, by level of income, 1991 and 1996

	Visits to Winnipeg FPs		
	1991	1996	% Change
Low	4.31	4.38	1.63%
Lower Middle	3.69	3.50	-5.10%
Middle	3.48	3.38	-2.87%
Upper Middle	3.46	3.25	-6.07%
High	3.03	2.93	-3.30%
Ratio Low/High	1.42	1.49	

Note. Values are not standardized.

In 2000/2001 Winnipeg residents, on average, saw about as many different FPs as they visited in 1991/92.

3.6 Winnipeg Residents' Use of Different Family Physicians

It would seem that Winnipeg residents see as many different FPs during the course of one year, as they did 10 years ago. For example, in 2000/01 the average Winnipeg resident saw 1.9 different FPs, down slightly since 1991/92 (i.e., 3.8 per cent decline in standardized rates). In addition, a number of different segments of the population saw slightly fewer different FPs in 2000/01 than in 1991/92, such as children and residents treated for mental health conditions. Conversely, other segments of the population saw slightly more different FPs in 2000/01 than in 1991/92, such as seniors, and

people who are admitted to personal care homes. Tables in Appendix A profile the number of different FPs seen by various populations of Winnipeg residents.

The number of different FPs seen by the young during the course of one year was slightly lower in 2000/01 than in 1991/92. The converse is true for the oldest-old who saw a slightly higher number of different FPs during a year. Winnipeg residents that have been treated for diabetes or hypertension saw on average two different FPs in 2000/01, and the number of different FPs seen per year remained relatively unchanged over the term. Winnipeg residents treated for psychotic or non-psychotic mental health disorders also saw an average of two different FPs in 2000/01, and the number of different FPs seen per year was stable over time.

In 2000/01, the higher the number of visits to an FP by Winnipeg residents, the greater the number of doctors seen. Residents who visited FPs two to five, six to nine, or 10 or more times per annum saw, on average, 1.8, 2.6, and 3.4 different doctors.

The rate at which Winnipeggers visit an FP might be related to the number of different FPs seen, and changes in service intensity might alter the number of different FPs seen over time. That is, those with higher visit rates may be more likely to see more practitioners, and if high users visit less often over time they may see fewer FPs each year as time passes. We assessed temporal changes in the number of FPs seen by residents who varied in their service intensity. Residents who visited FPs two to five (i.e., medium users), six to nine (i.e., high users), or 10 or more times per annum (i.e., intense users) visited 1.8, 2.6, and 3.4 different physicians in 2000/01. And, the number of different FPs seen each year by medium, high, and intense users declined five, four, and three per cent, respectively, between 1991/92 and 2000/01 (Table 3.2).

Table 3.2: Average number of FPs seen per Winnipeg resident, by service intensity of residents, per annum, 1991/92 - 2000/01

Crude Rates		Number of Visits										Per Cent Change		
		Service Intensity	per Annum	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years 1991-2000
Medium	2-5 visits	1.9	1.9	1.8	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	-5%	0%
High	6-9 visits	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	-4%	0%
Intense	10 + visits	3.5	3.7	3.7	3.7	3.6	3.5	3.5	3.5	3.4	3.4	3.4	-3%	-3%
Total*		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	-5%	-5%

* Total: Number of FPs seen by average Winnipeg resident.

To determine the extent of change or stability in the number of different FPs seen by Winnipeg residents from a longitudinal perspective, we recalculated these values for three-year periods (Table 3.3). During 1998/99 to 2000/01, medium intensity users visited an average of 2.1 different FPs, which is lower than high users (i.e., 3.2 different physicians) and intense

users (i.e., 4.6 different physicians). The number of different FPs seen by medium, high, and intense users declined five, three, and eight per cent, respectively, between 1992/93 and 2000/01.

Table 3.3. Average number of FPs seen per Winnipeg resident, by service intensity of Winnipeg residents, for three-year periods

		Crude Rates			Per Cent Change
		Number of Visits per Annum	1992/93-1994/95	1995/96-1997/98	1998/99-2000/01
Service Intensity					
Medium	2-5 visits	2.2	2.1	2.1	-5%
High	6-9 visits	3.3	3.2	3.2	-3%
Intense	10 + visits	5.0	4.8	4.6	-8%
Total*		3.5	3.4	3.3	-6%

* Total: Number of FPs seen by average Winnipeg resident.

To determine the extent to which Winnipeg residents contacted different FPs over the 10-year term⁷, we calculated these values for the cohort of people who resided in the city over the period and visited at least once (N=161,940) (Table 3.4). Winnipeg residents who resided in the city for at least 10 years saw 10.9 different FPs, on average. Children saw more different FPs over the term (i.e., 12.5) than any other age group. Seniors, in comparison, saw the least number of different FPs during the 10 years (i.e., 8.1).

Table 3.4. Average number of different FPs seen by residents of different age groups, per annum, 1991/92 - 2000/01

Age (years)	Number of Residents	Number of Different FPs	
		Mean	Median
00-10	2,782	12.5	11
11-20	10,282	11.9	11
21-45	55,996	13.8	12
46-65	49,031	9.9	8
66+	43,849	8.1	7
Total	161,940	Average	10.9

⁷ Children less than 10 must have resided in the city from birth until March 31, 2001.

4.0 SUPPLY AND AVAILABILITY OF WINNIPEG FAMILY PHYSICIANS, 1991/92 - 2000/01

4.1 Supply and Availability of Winnipeg Family Physicians

The number of FPs who billed Manitoba Health for clinical services in any one year declined five per cent from 634 in 1991/92 to 605 in 2000/01 (Table 4.1). One of the most common measures of services provided by all FPs, the full-time-equivalent measure, declined only three per cent from 470 in 1991/92 to 454 in 2000/01. Therefore, if the total volume of services provided by Winnipeg FPs had been offered by FPs who worked a full-time equivalent of one, it would have taken 470 FPs in 1991/92 and 454 FPs in 2000/01 to provide the total amount of care used. Tables C.1a and C.1b in Appendix C summarize these and other indicators of Winnipeg FP supply.

Table 4.1: Number of Winnipeg FPs, by type of physician, 1991/92 - 2000/01

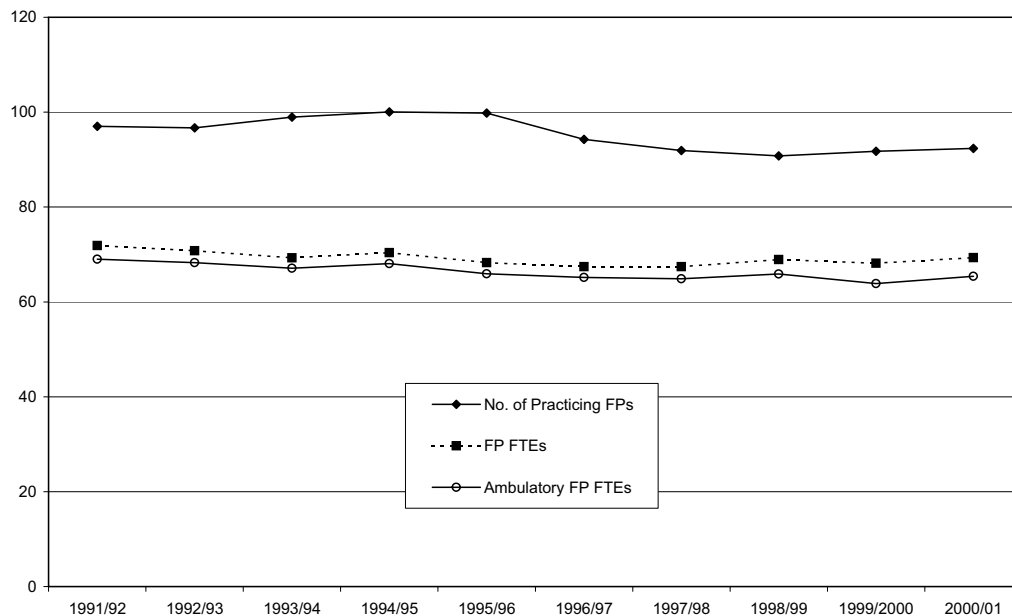
Number of FPs	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change		
											10 Years 1991-2000	3 Years 1998-2000	
Eligible to Bill													
Manitoba Health	--	--	--	744	701	703	657	662	654	665	n/a	0%	
FPs, by Billing Status													
Billed Manitoba Health	634	632	648	654	651	614	597	590	599	605	-5%	3%	
FPs, by Workload													
Worked part-time	355	361	389	379	390	351	347	329	336	337	-5%	2%	
Worked full-time or more	279	271	259	275	261	263	250	261	263	268	-4%	3%	
FPs, by Scope of Practice													
FPs, non-ambulatory focus	66	61	46	44	54	44	49	53	57	52	-21%	-2%	
FPs, ambulatory focus	568	571	602	610	597	570	548	537	542	553	-3%	3%	

There were 97 FPs per 100,000 Winnipeg residents in 1991/92 and 92 per 100,000 in 2000/01. Conversely, there were 1,031 Winnipeg residents per FP in 1991/92 and 1,083 in 2000/01.

As the population of Winnipeg remained relatively stable at approximately 650,000 residents over the past decade, estimates of the number of FPs and FTEs per 100,000 Winnipeg residents have declined five and four per cent over the period. That is, there were 97 FPs per 100,000 Winnipeg residents in 1991/92 and 92 per 100,000 in 2000/01. This represents a decline of five per cent. The highest FP to population ratios were in 1994/95 and 1995/96 at 100 per 100,000. Therefore, between 1995/96 and 2000/01 FP to population ratios declined eight per cent. Conversely, the average number of Winnipeg residents per Winnipeg FP or FTE increased by five and four per

cent, respectively, between 1991/92 and 2000/01. There were 1,031 Winnipeg residents per FP in 1991/92 and 1,083 residents per FP in 2000/01 (Figure 4.1). More detailed measures of physician to population and population to physician ratios are available in Table C.2a and C.2b in Appendix C.

Figure 4.1: Number of FPs per 100,000 Population, 1991/92 - 2000/01



Between 1991 and 2000, the number of medical school students admitted to the University of Manitoba remained relatively stable at between 72 to 75 enrollees. In 2001, total enrolment increased to 85 medical students.

Between 1991 and 2000, the number of medical school students admitted to the University of Manitoba remained relatively stable at approximately 72 to 75 enrollees. In 2001, total enrolment increased to 85 medical students.⁸ Prior to 1994/95, when new medical physicians could practice as FPs under the one-year rotating residency program, the numbers of FPs who started providing clinical services in any one year was approximately 50⁹ and the number who stopped providing services was approximately 35. Following changes to the length of physician residency requirements, the migration patterns of FPs into and out of the clinical workforce re-stabilized in 1995/96, at approximately 25 FPs per year entering or exiting the clinical workforce.

Yearly turnover among Winnipeg FPs was approximately 13.7 per cent in 1991/92. By 1996/97 turnover declined to 8.4 per cent, and by 2000/01 it was 7.9 per cent.

Yearly turnover among Winnipeg FPs was approximately 13.7 per cent at the beginning of the term, due to the high number of FPs entering and leaving in 1991/92. But, by 1996/97 turnover declined to 8.4 per cent with approximately 25 to 29 FPs starting to practice as Winnipeg FPs each year and 22 to 29 FPs discontinuing practice as Winnipeg FPs. By 2000/01

⁸ The Faculty of Medicine provided University of Manitoba statistics in August, 2002.

⁹ This number includes all FPs who started providing services, and includes new graduates from any university program as well as other new recruits to the province.

workforce turnover was 7.9 per cent. The average age of FPs entering the workforce has increased over time, as has the average age of FPs who exited. As expected, new FPs have always been younger than those who stop providing services. Table 4.2 summarizes the migration patterns and characteristics of Winnipeg FPs.

Table 4.2. Migration patterns of Winnipeg FPs per annum, 1991/92 - 2000/01

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Average	
											10 Year 1991-2000	3 Year 1998-2000
Immigrants*												
# of immigrants	51	50	64	33	19	25	27	29	26	25	35	27
FTE in Year After Arrival (Annualized)	24.6	29.4	25.1	14.0	8.8	16.5	14.0	23.4	21.5	12.9	19.0	19.3
Mean Age	31.4	32.9	34.8	33.2	35.7	38.6	35.8	37.5	37.5	36.0	35.3	37.0
% Female	35%	30%	34%	42%	37%	40%	26%	38%	31%	32%	--	--
FTE/Head	0.48	0.59	0.39	0.42	0.46	0.66	0.52	0.81	0.83	0.52	0.57	0.72
Emigrants**												
# of emigrants	36	31	35	35	41	27	27	22	29	23	31	25
FTE in Year Prior to Arrival (Annualized)	12.6	19.2	20.7	19.4	28.7	19.1	12.1	10.5	15.1	16.1	17.4	13.9
Mean Age	45.0	41.7	41.4	47.7	48.2	44.5	41.7	40.5	42.1	52.2	44.5	44.9
% Female	19%	26%	29%	26%	24%	37%	44%	36%	45%	22%	--	--
FTE/Head	0.35	0.62	0.59	0.55	0.70	0.71	0.45	0.48	0.52	0.70	0.57	0.57
Net Migration - FPs (Im - Em)												
	15	19	29	-2	-22	-2	0	7	-3	2	4	2
Net Migration - FTE (Im - Em)												
	12	10	4	-5	-20	-3	2	13	6	-3	2	5

Note: *Immigrant, in this context, means FP who started to provide services to Winnipeg residents.

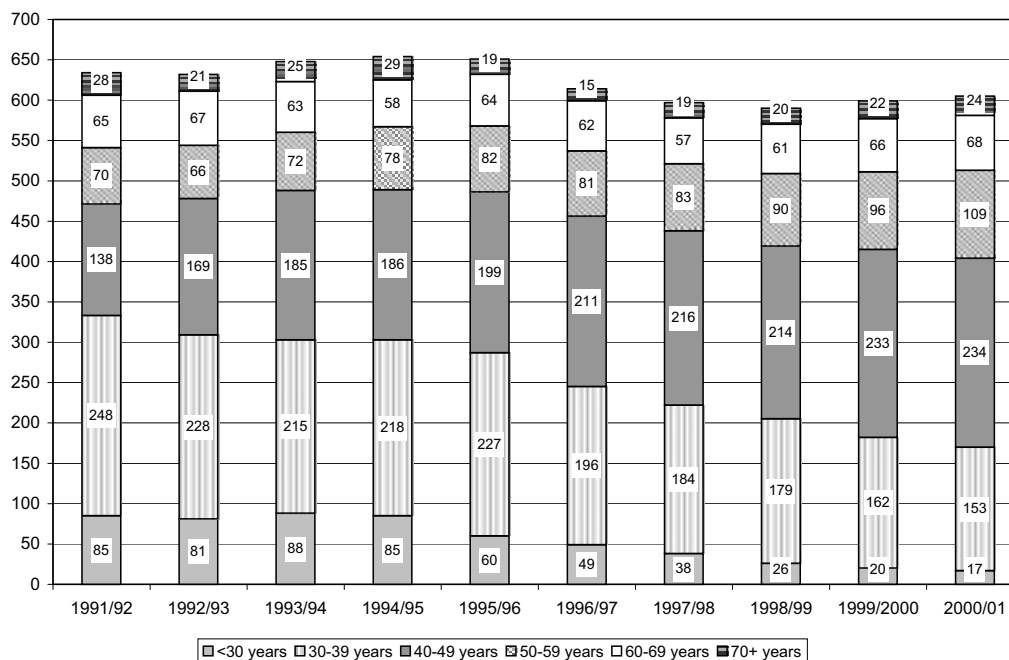
**Emigrant, in this context, means that a FP stopped providing services to Winnipeg residents.

4.2 Characteristics of Winnipeg Family Physicians

The average age of FPs increased from 42.6 years in 1991/92 to 46.4 years in 2000/01.

The average age of Winnipeg FPs has increased from 42.6 years in 1991/92 to 46.4 years in 2000/01. Figure 4.2 illustrates that the aging of the physician workforce appears to be primarily related to growth in the number of FPs between 40 and 59 years, and a decline in the number of FPs less than 39 years.

Figure 4.2: Number of Practicing Winnipeg FPs, by Age Category, 1991/92 - 2000/01



The number of FPs less than 30 years declined from 85 in 1991/92 to 17 in 2000/01 (i.e., 80 per cent decline), and the largest single-year decline occurred between 1994/95 and 1995/96 when residency requirements were changed. The number of FPs 30 to 39 years of age declined steadily, by 38 per cent, over the term. Conversely, the numbers of FPs 40 to 49 years of age and 50 to 59 years of age have increased steadily by 70 and 56 per cent, respectively. The number of FPs over the age of 60 has remained stable (See Table C.3a in Appendix C).

Between 1991/92 and 2000/01, the proportion of female FPs in the workforce increased slightly from 29 to 31 per cent. Female FPs, on average, are younger than their male counterparts in all time periods. While there has been a growth in salaried practitioners (who submit 'evaluation claims') they remain a small proportion (i.e., five to seven per cent) of the workforce in 2000/01. Lastly, while the number of FPs working part-time has declined slightly, they represented approximately 50 to 55 per cent of the workforce in all time periods.

4.3 Scope of Practice of Winnipeg Family Physicians

Over the 10-year period, the number of Winnipeg FPs who focused their services primarily toward inpatients¹⁰ declined from 66 to 52 and these practitioners represented 10 and eight per cent of all practicing Winnipeg FPs at the beginning and end of the period. While the number of FPs who

¹⁰ Inpatient subspecialists are FPs for whom 70 per cent or more of their billings are from services to inpatients. These practitioners primarily provide surgical assistant services. Some of these FPs provide care to inpatients and/or to residents of personal care homes.

elected to focus their practice on serving hospital inpatient and/or nursing home residents declined, total workloads among practitioners of this type increased over the period from 19 to 26 FTEs for an increase of seven FTEs. This increase in supply of services by these FPs and concentration of inpatient services within a smaller number of FPs is reflected in data demonstrating an increase in workload per FP of this type (i.e., FTE/FP increase from .28 to .49 between 1991/92 and 2000/01). Table 4.3 summarizes workload measures for different types of Winnipeg FPs, and Table C.1b and C.4a in Appendix C provides more details on the supply of FPs by scope of practice.

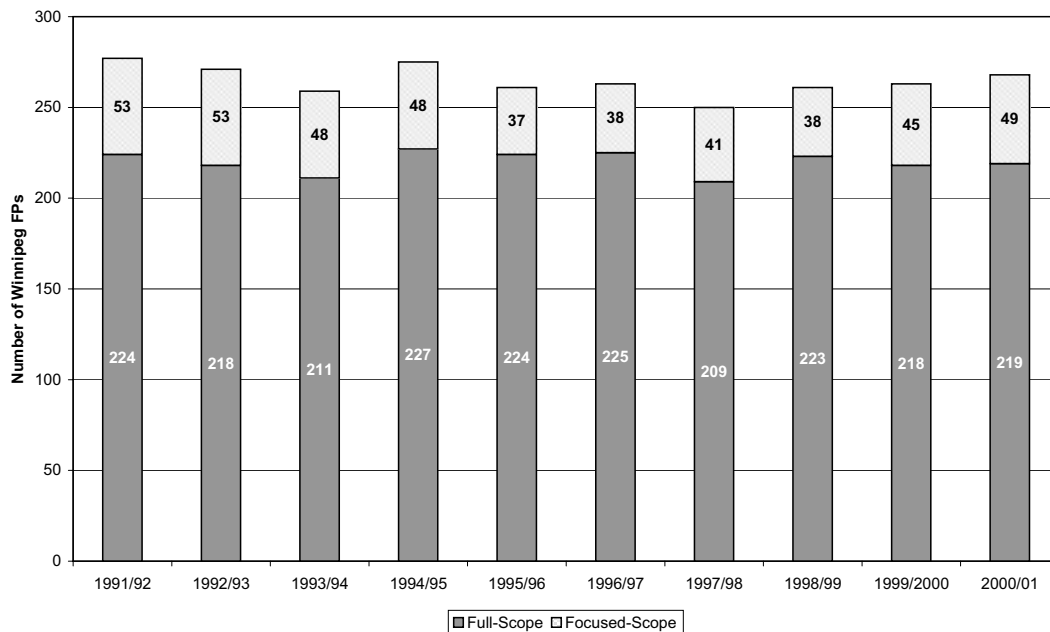
Table 4.3. Workload measures for Winnipeg FPs, by physician type, 1991/92 - 2000/01

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
											10 Years	3 Years
All Winnipeg FPs												
Visits/Wednesday	27.9	27.5	27.1	27.6	27.1	27.2	27.4	28.1	27.6	27.8	0%	1%
Full-time Days/Annum	153	150	147	148	152	155	157	160	154	157	3%	-2%
Visits/Annum	4,198	4,170	3,932	4,015	3,949	4,139	4,227	4,441	4,163	4,193	0%	-5%
Different Patients/ Annum	1,700	1,733	1,655	1,685	1,649	1,690	1,727	1,777	1,699	1,706	0%	-4%
FTE/FP	0.74	0.73	0.70	0.70	0.68	0.72	0.73	0.76	0.74	0.75	1%	-1%
Part-Time FPs												
Full-time Days/Annum per FP	83	85	85	82	90	91	96	96	93	99	19%	3%
Visits/Annum per FP	1,536	1,640	1,615	1,538	1,591	1,690	1,801	1,775	1,649	1,599	4%	-10%
Different Patients/ Annum per FP	833	900	871	813	822	881	923	925	860	833	0%	-10%
FTE/FP	0.38	0.39	0.38	0.36	0.36	0.38	0.41	0.42	0.39	0.40	5%	-5%
Full-Time FPs (FTE = 1 or more)												
Visits/Annum per FP	7,103	7,064	7,063	7,092	7,048	7,029	7,239	7,410	7,154	7,189	1%	-3%
Different Patients/ Annum per FP	2,804	2,843	2,832	2,886	2,886	2,769	2,845	2,850	2,771	2,804	0%	-2%
FTE/FP	1.20	1.19	1.17	1.18	1.16	1.16	1.18	1.19	1.19	1.19	-1%	0%
FPs Residing in Winnipeg Throughout the Time												
Full-time Days/Annum per FP	191	193	191	191	191	190	188	189	185	180	-6%	-5%
Visits/Annum per FP	5,764	5,750	5,574	5,625	5,459	5,413	5,369	5,454	5,261	5,048	-12%	-7%
Different Patients/ Annum per FP	2,354	2,353	2,269	2,272	2,213	2,122	2,099	2,098	2,043	1,963	-17%	-6%
FTE/FP	1.02	1.01	1.00	0.99	0.96	0.96	0.96	0.95	0.94	0.92	-10%	-3%
FPs, in-patient specialists												
FTE/FP	0.28	0.27	0.31	0.34	0.28	0.34	0.34	0.37	0.49	0.49	75%	33%
FPs, ambulatory focus												
FTE/FP	0.79	0.78	0.73	0.73	0.72	0.74	0.77	0.80	0.77	0.77	-2%	-4%

The number of Winnipeg FPs who provided primary ambulatory care services on a full-time basis remained relatively stable over the period, as did the diversity in their scope of practice.

The number of Winnipeg FPs, who provided primary ambulatory care services on a full-time basis, remained relatively stable over the period, as did the diversity in scope of practice among these practitioners. Between 1991/92 and 2000/01, the numbers of Winnipeg FPs who provided services to patients on an ambulatory care basis declined three per cent, while the FTE complement of these practitioners declined five per cent. The proportion of the work force that were full-time FPs who provided services directed at a wide array of diagnostic conditions (hereinafter referred to as full-scope FPs) remained stable at approximately 80 per cent of full-time FPs who focused their practice on ambulatory care. This was true in each year between 1991/92 and 2000/01. And, since the number of full-time FPs remained relatively stable over the period, so did the number of full-scope FPs. Appendix E summarizes the methods used to classify FPs as inpatient specialists, FPs with focused-scopes or full-scope FPs. Figure 4.3 illustrates the stability in scope of practice among full-time FPs who focus on providing ambulatory care.

Figure 4.3: Scope of Practice of Full-Time, Ambulatory Care FPs, 1991/92 - 2000/01



4.4 Workloads of Winnipeg Family Physicians

The most common measure of workload, FTEs per FP, increased from 0.74 in 1991/92 to 0.75 in 2000/01 (i.e., one per cent increase). Therefore, if all FPs worked exactly the same amount, each practitioner would have worked 0.75 of a full-time equivalent in 2000/01. Average visits per annum per FP remained stable. Table 4.3 summarizes these and other measures of produc-

tivity, and all of these measures suggest little change in aggregate workload. There is evidence, however, that some types of FPs are providing more visits per annum than previously, while others are providing less.

Full-time FPs provided an average of 7,103 visits per annum in 1991/92 and 7,189 in 2000/01, seeing approximately 2,800 different people in each year.

As illustrated in Table 4.3, it would appear that the workloads of part-time FPs were slightly higher in 2000/01 than in 1991/92, as evidenced by a five per cent increase in FTE per FP, and the 10-year gain in workload among part-time FPs appears to be due to an increase in the number of full-time days per year (i.e., 83 to 99 days per year in 1991/92 and 2000/01, respectively). Workloads of full-time FPs remained stable, as the FTE per FP measure was 1.20 in 1991/92 and 1.19 in 2000/01. Full-time FPs provided an average of 7,103 visits per annum in 1991/92 and 7,189 visit per annum in 2000/01. Full-time FPs saw approximately 2,800 different people in 1991/92 and in 2000/01.

Although FPs who have been resident in Winnipeg and providing clinical services throughout the time delivered 10 to 12 per cent less visits per annum between 1991/92 and 2000/01, they continue to carry higher than average workloads.

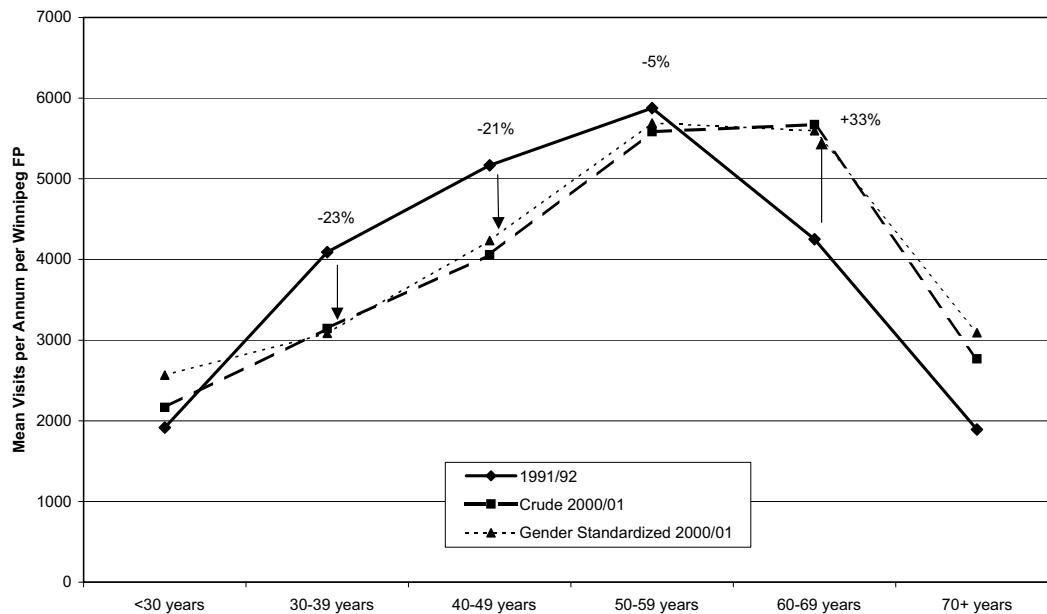
FPs, who have been resident in Winnipeg and providing clinical services throughout the time, have workloads that have declined in the order of 10 to 12 per cent from 1991/92 to 2000/01. But, these FPs have, and continue, to carry higher than average workloads. For example, the FTE per FP workload measure for 'resident' FP was .92 in 2000/01, in comparison to .75 for an average FP. These FPs, who have long residencies, represent approximately 65 to 70 per cent of the workforce in any one year.

There are gender differences in workloads, as illustrated in Table C.4b in Appendix C. In any one period, female FPs, on average, carried workloads that were approximately 80 per cent that of male FPs. And, this relationship between gender and workload remained stable across time.

In 1991/92 and 2000/01, older FPs provided more visits on an annual basis than younger doctors.

As illustrated in Figure 4.4, the age of an FP is a significant determinant of their workload. In 1991/92 and 2000/01, older FPs provided more visits on an annual basis than younger physicians. In 1991/92, this relationship held true among FPs less than 60 (see dotted line in Figure 4.4). In 2000/01, this relationship held true among FPs less than 70, as physicians over the age of 60 in 2000/01 appear to be working much more than physicians of this age did in 1991/92 (see solid line in Figure 4.4). Therefore, it would appear that the relationship between age and workload has changed over time.

Figure 4.4: Mean Visits per Annum per Winnipeg FP, by Age, 1991/92 and 2000/01



The average age of the FP workforce increased from 42.6 to 46.4 between 1991/92 and 2000/01, due to an increase in the proportion of FPs between the ages of 40 and 59 and less FPs under the age of 39. Therefore, if the relationship between age and productivity did not change over time and the proportion of FPs in the workforce in their most productive years increased, we expected to see an increase in the productive capacity of the workforce.

FPs between the age of 30 and 49 years in 2000/01 provided approximately 20 per cent fewer visits per annum than their same age peers did ten years ago. FPs between 50 and 60 delivered slightly fewer visits per annum (i.e., five per cent), and FPs over 60 in 2000/01 provided over 30 per cent more visits per annum than their same age peers did in 1991/92.

To estimate expected increases in productive capacity as a function of the changes in the age structure of the FP population, we calculated the average visits per annum per physician for different age categories of FPs using data from 1991/92 to 2000/01 and applied these data to the age distribution of FPs in 1991/92 and 2000/01. In this way, we estimated workforce productivity gains of 12.1 per cent due to the age structure changes in the FP population. If FPs in 2000/01 had worked the same as their same age peers did in 1991/92, we estimated workforce productivity gains of 12.2 per cent. However, the population of Winnipeg FPs did not become more productive.

One of the most substantial temporal changes in FP workloads appears to be related to differences between generations in their workloads. It would appear that some FP age groups are working significantly less in 2000/01 than physicians of the same age cohort in 1991/92, and others are working significantly more than their same age predecessors. As illustrated in Table 4.4, Winnipeg FPs, between the age of 30 and 49 years in 2000/01, provided approximately 20 per cent less visits per annum than their same age peers did 10 years ago. FPs, between 50 and 59, were working slightly less (i.e.,

five per cent), and FPs 60 to 69 years in 2000/01 provided over 30 per cent more visits per annum than their same age peers did in 1991/92. This pattern of reductions in workload among physicians between 30 and 59 years of age in 2000/01, relative to their same age peers in 1991/92, is true for male and female FPs. And, these patterns suggest that there are intergenerational differences in workloads.

Table 4.4. Workload measures for Winnipeg FPs, by age of physician, visits per annum, 1991/92 and 2000/01

Age of FP	1991/92	2000/01	Per Cent Change
			10 Years 1991-2000
<30 years	1,917	2,167	13%
30-39 years	4,092	3,145	-23%
40-49 years	5,167	4,057	-21%
50-59 years	5,877	5,583	-5%
60-69 years	4,250	5,671	33%
70+ years	1,892	2,769	46%
Mean Visits per Annum for All FPs	4,198	4,193	0%

It is important to know that 64 per cent of the workforce was between the age of 30 and 49 in 2000/01; and this is the generation that was providing in the magnitude of 20 per cent less visits per annum than their same age peers did in 1991/92. An additional 18 per cent of the workforce was between the ages of 50 and 59 in 2000/01; these FPs worked five per cent less than their same age predecessors did in 1991/92. So...when 82 per cent of the workforce provides fewer services, relative to their same age peers 10 years prior, and the workforce of FPs provide relatively the same level of services, some FPs must be working more. Our analysis would suggest that it is the 11 per cent of FPs between 60 and 69 years of age in 2000/01, who have substantially higher workloads than their same age peers in 1991/92 (i.e., 33 per cent). Additionally, this generation of older physicians has always had one of the highest workloads relative to all other age groups. Therefore, it would appear that this generation has kept supply measures, in the aggregate, stable despite reductions in workloads assumed by FPs who are 30 to 59 years of age.

FPs between 60 and 69, and the youngest group of FPs were the only generations that increased their workloads as they aged over the past ten years.

As mentioned, FPs between 60-69 years of age in 2000/01 are working 33 per cent more than FPs of the same age in 1991/92. In 2000/01, these FPs provided an average of 5,671 visits per annum, which represents a workload 35 per cent higher than the average (i.e., 4,193 visits per annum), and a workload higher than any other age group. When we follow the cohort of FPs who were 61 to 66 years in 2000/01 (i.e., those close to retirement age), to determine their workloads in 1991/92, we found that these practitioners had increased their productivity over the past 10 years. This generation, plus

the youngest group of FPs, were the only generations that had increased their workloads as they aged over the past 10 years. Table 4.5 illustrates these findings, and more detailed profiles of workload measures between generations and within age cohorts are found in Appendix C.

Table 4.5 Workload measures for Winnipeg FPs resident throughout the period, by age cohort, 1992/93 - 2000/01

All Winnipeg FPs		Visits per Annum			Differences in Workloads 1992/93-2000/01
Age of FPs in 1992/93-1994/95	Age of FPs in 1998/99-2000/01	1992/93- 1994/95	1995/96- 1997/98	1998/99- 2000/01	Within Age Cohort
31-33 years	37-39 years	3,890	3,570	4,425	14%
34-36 years	40-42 years	3,494	3,312	3,764	8%
37-39 years	43-45 years	4,383	3,877	4,283	-2%
40-42 years	46-48 years	4,600	4,409	4,271	-7%
43-45 years	49-51 years	5,087	5,478	5,235	3%
46-48 years	52-54 years	5,409	5,060	5,101	-6%
49-51 years	55-57 years	4,916	4,777	5,067	3%
52-54 years	58-60 years	6,016	5,072	5,780	-4%
55-57 years	61-63 years	5,290	5,391	6,653	26%
58-60 years	64-66 years	5,145	5,646	5,532	8%
61-63 years	67-69 years	5,430	4,087	4,653	-14%
64-66 years	70-72 years	3,561	3,934	2,546	-28%

FPs who provided services throughout the period represented approximately 70 per cent of practicing FPs in 1991/92 and 66 per cent in 2000/01, and they provided approximately 65 and 61 per cent of the total complement of full-time equivalents in 1991/92 and 2000/01. Intergenerational differences in workload are also evident among this group: (a) 21 per cent declines in workloads among physicians 30 to 49 years of age in 2000/01 relative to FPs of the same age in 1991/92, and (b) 29 per cent increases in workloads among FPs between the ages of 60 to 69 in 2000/01 relative to FPs of the same age in 1991/92 (Table 4.6). But, it is important to note that these FPs, when compared in the aggregate and between age groups, have workloads that are much higher than the workforce averages. In 2000/01 resident FPs provided an average of 5,310 visits per annum and resident FPs from 40-49, 50-59, and 60-69 years of age provide an average of 4,893, 6,237, and 6,393 visits per annum. A workload of 5,310 visits in 2000/01 is 69 per cent higher than workloads in 2000/01 of FPs who had not been resident throughout the time.

Table 4.6: Mean visits per annum for Winnipeg FPs, by length of residency in Winnipeg and by age, 1991/92 and 2000/01

	Resident Throughout Term		Not Resident Throughout Term	
	1991/92	2000/01	1991/92	2000/01
<30 years	4,469	*	1,066	2,167
30-39 years	5,758	4,691	2,441	2,810
40-49 years	6,416	4,893	2,900	3,112
50-59 years	7,357	6,237	3,576	3,802
60-69 years	4,959	6,393	3,927	4,601
70+ years	*	2,818	1,641	*
Total (All FPs)	6,056	5,310	2,515	3,135

* Values not included, due to small number of FPs in the group

The average age of FPs, who provided services throughout the period was 51.4 in 2000/01. The average age of the patients seen by 'resident' FPs increased from 40.5 to 48.4 years between 1991/92 and 2000/01 (i.e., 20 per cent increase), while the average age of patients seen by non-resident FPs increased from 40.8 to 42.5 (i.e., four per cent increase). In 1991/92, 'resident' FPs saw an average of 2,354 different people, and in 2000/01 they saw an average of 1,963.

5.0 DISCUSSION

5.1 Use of Family Physicians by Winnipeggers, 1991/92 - 2000/01

In 2000/01, approximately 75 per cent of Winnipeg residents visited a Winnipeg FP, for an average of 3.49 times. Between 1991/92 and 2000/01 these measures declined one per cent and three per cent, respectively.

In 2000/01, approximately 75 per cent of Winnipeg residents visited a Winnipeg FP and residents visited an average of 3.49 times. Between 1991/92 and 2000/01, this measure of the proportion of residents who visited declined one per cent, and standardized visit rates declined three per cent. While the proportion of men and women who visited remained relatively unchanged, men visited less often than women. These rates and patterns of utilization between the genders are similar to jurisdictions elsewhere in Canada (Chan and Anderson, 1996).

So, how significant is a three per cent decline in visit rates? If Winnipeg residents had visited FPs to the same extent in 2000/01 as they did in 1991/92, the population would have to consume approximately three per cent more services than they did. The provision of three per cent more services in 2000/01 would require approximately 10 more full-time FPs.¹¹ However, this interpretation implies that the rate of consumption of visits in 1991/92 was appropriate, which is difficult to ascertain, and that the need for services (beyond that related to age and gender) were the same in both time periods. Previous research in Manitoba suggests that there has been an extraordinary improvement in the health of Winnipeg residents over the last 10 years (Roos et al., 2001). Also, research in Manitoba suggests that those among the general population who do not contact a physician tend to be very healthy. We found evidence of an increased prevalence of diabetes and hypertension health conditions, as well as psychotic and non-psychotic mental health disorders (See Appendix D).

In any single year between 1991/92 and 2000/01 people treated for hypertension, diabetes, non-psychotic or psychotic mental disorders visited approximately twice as often as the average Winnipeg resident. In 2000/01, residents 85 years or older visited four times as often as children under 12 years. Thus it appears that the delivery of services is needs-based.

Visit patterns varied markedly for some Winnipeg residents, both within a single year and across time. In any single year between 1991/92 and 2000/01, it appears that utilization of FP services is related to relative risk of needing care as vulnerable populations use more care than the average Winnipeg resident. For example, people treated for hypertension, diabetes, non-psychotic or psychotic mental disorders visit approximately twice as often as the average Winnipeg resident. In 2000/01, Winnipeggers age 85 years or older visit an FP four times as often as children less than 12 years. These observations support the notion that the delivery of FP services appear to be needs-based and those who visit an FP more often have higher levels of morbidity.

In any single year, Winnipeggers who resided in communities that have better health status, as measured by premature mortality rates, visited less often than people who resided in neighbourhoods with poorer health status.

¹¹ Winnipeg family physicians provided 2,283,006 visits to Manitobans in 2000/01. A three per cent increase in this volume of service amounts to an additional 68,490 visits. As the average full-time Winnipeg family physician provided 7,190 visits per annum in 2000/01, it would take an additional 10 of these practitioners to increase the volume of visits provided by Winnipeg family physicians by three per cent.

Interestingly, in any one year, residents of the healthiest areas visited an FP more often than would be expected, because these people visited just as often as, rather than less often than, residents of the community of average health. It could be that residents of the healthiest areas used more services than expected, or residents of areas in average health didn't use 'enough' services. Or, it could be that residents of average health communities and those of the healthiest communities were equally likely to experience ill health, and therefore, equally likely to visit. Or, there might be a threshold below which we might not expect visit rates to fall due to the use of prevention services. The appropriateness of FP utilization was not the focus of this investigation.

Temporal changes in patterns of use, by residents in communities that vary in their health status, appear to have resulted in more needs-driven delivery of services over time. That is, utilization of FP services among residents of the healthiest communities declined at a faster rate than the increase in use among residents in the least healthy communities. It is interesting to note, however, that visit rates among residents of average health communities declined as much as the healthiest communities when health was measured using premature mortality rates, and declined at a faster rate than the healthiest communities when health was measured using socioeconomic status as a proxy measure. This finding supports the notion that there is a threshold below which we might not expect rates to fall irrespective of high or increasing levels of population health. Further research would clearly be needed to understand the relationships between relatively high levels of health and use of FP services.

Temporal changes in rates of use for some groups, such as the young, were down substantially over the period, while those of others, particularly seniors, increased. Children did not visit specialists more often, because they visited FPs less often. The oldest-old did not visit specialists less often, because they visited FPs more often. Temporal declines in rates of use of any physician by children were a function of reductions in use of FPs and, to a lesser extent, specialists. Whether children are visiting FPs less than they should, or less than their parents would like them to visit, is unknown. The association between such a dramatic decline in visits and the health of children over the period is a topic worthy of further investigation. The determination of an association (or lack thereof) between temporal changes in service use among seniors and the health of this population is also a topic worthy of investigation.

Between 1991/92 and 2000/01 visit rates among seniors 65 to 74 increased 11 per cent, among those 75 to 84, 16 per cent, and among seniors 85 and over, only 2 per cent.

Between 1991/92 and 2000/01, standardized visits rates among seniors 65 to 74 years increased by 11 per cent, and visit rates among those 75 to 84 years increased 16 per cent. Among seniors 85 or more years, their visit rates increased only two per cent. Overall, visits among seniors 65 or more years

increased 13 per cent. It is interesting to note that increases in service use among seniors is occurring among younger seniors, rather than the oldest old. Additionally, young seniors seem to be increasingly substituting FP for specialty services (analysis not shown).

Winnipeggers that were 65 years of age and over increased their proportion of total encounters with FPs from 20.3 to 25.5 per cent over the ten-year period. In 2000/01 this age group represented 14.1 per cent of the population.

The proportion of total encounters between Winnipeggers that were 65 or more years and FPs increased from 20.3 to 25.5 per cent of all FP encounters over the 10-year period. In 2000/01, one in every four encounters was with a senior, while residents 65 or more years represented 14.1 per cent of the population. The increase in the 'greyness' of encounters appears to be more of a function of increases in visits per senior rather than growth in the size of the senior population. And, this intensification of services per senior is primarily among residents less than 85 years of age. If intensification of services to seniors had not occurred, 21.9 per cent of all encounters would have been attributable to this population. These findings are consistent with research conducted by others who have found the same results in other jurisdictions in Canada and abroad (Barer et al., 1995).

The age structure of the population of Winnipeg changed over time, with significant increases in the number of baby boomers (i.e., 24.6 per cent increase in those between the ages of 45 and 64), and of seniors (i.e., 7.4 per cent increase in those 65 or more years). This occurred at a time when the size of paediatric population, particularly those less than five years of age, declined. These demographic changes, coupled with intensification of service use among seniors and less utilization among the young, shifts the proportion of total encounters attributable to different patient age groups. Should these demographic and temporal patterns continue, the proportion of encounters with seniors would change substantially in the coming years. This finding may be quite significant from a clinical perspective, insofar as physicians report that it takes more time to provide care to seniors than to children. While we did not assess whether age was a determinant of the amount of time spent during a visit, the scant research that has been done in this area does not support this observation nor the observation that physicians spend more time with patients today than they did one decade ago (Watson, 2000; Mechanic et al., 2001).

Across the period, standardized visit rates among people treated for mental health conditions were relatively stable with reductions in standardized visit rates in the order of two to three per cent. The size of these reductions in service levels, however, is similar to the three per cent reduction in visit rates among the general Winnipeg population. By comparison, visit rates among people with hypertension were up nine per cent. Visit rates among residents, in the year before death, were down two per cent. And, visit rates among residents, in the year before their admission to nursing home, were

up 13 per cent. But, this increase exactly parallels the magnitude of increase in service intensity among seniors.

Authors of recent articles in the Winnipeg Free Press suggest that Winnipeggers increasingly feel that they don't 'have a family physician', and many Winnipeggers talk about this issue. While this concept is difficult to measure with utilization data, we could measure the number of different FPs seen by Winnipeg residents. We hypothesized that residents who wouldn't have a regular source of care would have to see different physicians each time they seek care, and should 'not having a family physician' become more prevalent the average number of different FPs seen would have increased. This measure does not directly measure continuity of care per se. For instance, FPs may increasingly work in group practices and continuous care can occur when a resident sees other physicians within a group practice. It would seem that Winnipeg residents saw as many (or slightly fewer) different FPs during 2000/01 as they did in 1991/92. Additionally, residents saw slightly fewer different FPs over the course of three years at the end of the term (i.e., 1998/99 - 2000/01) relative to the beginning (i.e., 1992/93 - 1994/95).

5.2 Supply and Availability of FPs by Winnipeg Residents, 1991/92 - 2000/01

It would seem that the number of FPs in Winnipeg has declined five per cent in the past decade and any aggregate change in supply is a function of emigration, retirement, immigration, and graduates. During the period 1991 to 2000, the number of medical students enrolled at the University of Manitoba remained relatively stable at 72 to 75 but this number increased to 85 in 2001. Researchers and scholars in Canada have observed that medical students increasingly are electing to specialize in areas other than family medicine (Rosser, 2002). While this report did not investigate the relationship between medical school enrolments and local supply, nor the extent to which physicians elect to practice family medicine, it is important to recognize that a number of specialists such as paediatricians, internists and gynaecologists provide primary care services in Winnipeg.

The number of FPs in Winnipeg and the number per 100,000 Winnipeg population both declined five per cent from 1991/92 to 2000/01.

The number of Winnipeg FPs per 100,000 Winnipeg population declined five per cent from 97 to 92, between 1991/92 and 2000/01. Others have found the FP to 100,000 population ratio in Manitoba to also be 92 in 2000, which places the province sixth among the 13 Canadian provinces and territories. In comparison to other Western provinces, a ratio of 92 ranks Manitoba ahead of Alberta, similar to Saskatchewan and lower than British Columbia on this measure of FP supply (Canadian Institute for Health Information, 2002).

The FP to population ratio peaked at 100 per 100,000 Winnipeg population in 1994/95 and 1995/96, which represents a decline of eight per cent from that time until 2000/01. Interestingly, a recent national study found a 5.1 per cent decline in physician (FP and specialists) to population ratios between 1993 and 2000 across Canada. Much of this decline was attributed to a sharp drop in Canadian postgraduates entering practice between 1994 and 2000, and a decline in the proportion of post-graduates who entered their first year of practice as FPs (Chan, 2002b). We also saw a decline in the size of the population of FPs less than 30 years of age.

While FP to population ratios were at 100 in 1994/95 and 1995/96, FP FTEs per 100,000 Winnipeg population were the same in 1994/95 and 1995/96 relative to 2000/01. This suggests that workloads of FPs vary across time to attenuate shifts in the supply of FPs; and this relationship between supply and availability has been observed by others (Chan and Anderson, 1996). FP FTEs per 100,000 Winnipeg population declined four per cent from 72 to 69 between 1991/92 and 2000/01. Therefore, while the number of FPs per Winnipeg population declined (i.e., five per cent), aggregate measures of workforce productivity¹² increased to reduce supply by only four per cent (i.e., rather than five per cent). Workforce productivity gains between 1991/92 and 2000/01 appear to be related, in part, to workload increases among part-time FPs, who are working more days per annum (i.e., approximately 16 more days, on average). By comparison, workloads among full-time FPs remained relatively stable. This coincides with the observation that the number of hours FPs spend doing professional activities each week remained unchanged between 1990, 1995, and 2001 as measured with physician resource questionnaires (Buske, 2002; Canadian Medical Association, 2002). Interestingly, others have documented an increase in FP workloads of approximately seven per cent, when workloads were measured using the FTE/FP measure (Chan, 2002a). Using the multiple measures of workloads we developed here (Appendix D), a workload increase of approximately seven per cent since 1991/92 equates to roughly the provision of 290 more visits per year.

5.3 Workforce Characteristics: Turnover, Age, Gender and Scope of Practice

Despite relative stability in counts of supply, we measured annual rates of workforce turnover to see if migration patterns might contribute to a perception that residents are less likely to 'have' an FP. However, there has been little change in the number of Winnipeg residents who have to search for another FP each year due to workforce turnover. Between 1996/97 and 2000/01, approximately 25 FPs start or stop providing services in any one year. This is a small portion of a workforce of approximately 600 FPs, and equals a turnover rate of roughly eight per cent. In fact, the number of FPs who stopped providing services in any one year declined steadily since

¹² This finding is true whether workloads were measured on the basis of average visits for a full-time day of work, the number of full-time days worked per annum, the number of visits provided per annum or FTEs per FP.

1996/97. A low workforce turnover rate, coupled with the observation that Winnipeg residents see just as many (or less) different FPs in any one year, suggests that FP services are just as 'consistent' in 2000/01 as in 1991/92.¹³

Over the ten-year period the age structure of the work force changed significantly, the average age of Winnipeg FPs increased from 42.6 years in 1991/92 to 46.4 in 2000/01.

Over the 10-year period, there were significant changes in the age structure of the workforce, which resulted in an increase in the average age of Winnipeg FPs from 42.6 years in 1991/92 to 46.4 years in 2000/01. While the proportion of FPs less than 30 years declined from 13 to three per cent of the workforce, those age 30 to 39 declined from 39 to 25 per cent of the workforce, the proportion of FPs age 40 to 49 increased from 22 to 39 per cent and the proportion age 50 to 59 increased from 11 to 18 per cent over the period. In 2000/01, the cohort of Winnipeg FPs less than 30 years of age included only 17 practitioners. This reduction in the number of younger FPs has been documented in other jurisdictions in Canada—and may relate indirectly to changes in residency requirements and terms (Chan, 2002a). If these young FPs have traditionally been a source of practitioners who accept new patients, this finding may contribute to a reduction in the number of FPs who are 'growing' their practices. A recent national survey found that less than one in 10 (6.8%) medical graduates have elected to specialize in the area of family medicine (College of Family Physicians of Canada, 2001).

The number of FPs over 60 was stable—94 physicians in 1991/92 and 92 in 2000/01, but the number of FPs between 50 and 59 increased from 70 to 109. So, there is likely to be an increase in the number of Winnipeggers who will lose access to an FP when the cohort of FPs who are currently in their 50s retire. And, since the number of physicians in this age group is at an unprecedented high, and they are the most productive practitioners, it is likely that there may be unprecedented high numbers of Winnipeggers seeking new family physicians when these FPs begin to retire.

In Winnipeg the proportion of females in the workforce increased only slightly from 29 per cent of FPs in 1991/92 to 31 per cent in 2000/01.

The number of female family physicians is increasing in Canada. Other researchers have found that these practitioners provide fewer services per year and are less likely to work full-time (Chan, 2002b). Additionally, female family physicians in Saskatchewan and Manitoba worked an average of 45.7 hours per week in 2001, while male practitioners worked an average of 59.4 hours per week in 2000 (College of Family Physicians of Canada, 2001). Therefore, if the gender structure of the physician workforce in Winnipeg changed over time, as it has in other jurisdictions, the volume of services provided by FPs could change. But, the proportion of the workforce that was female increased only slightly from 29 per cent of FPs in 1991/92 to 31 per cent in 2000/01.

Salaried practitioners have grown in popularity over the term, but only seven per cent of the workforce received this form of remuneration from Manitoba Health in 2000/01. During our consultation with physicians in Winnipeg it

¹³ The number of different FPs seen per annum is more a measure of consistency than continuity.

Salaried practitioners have grown in popularity over the term but only seven per cent of the workforce received this form of remuneration from Manitoba Health in 2000/01. A few salaried FPs are not required to submit evaluation claims, but the absence of information on their services is not likely to influence the results presented here.

Between 1991/92 and 2000/01 the number of Winnipeg FPs providing services almost exclusively to inpatients declined from 66 to 52 over the term and these practitioners represented 10 and eight per cent of all practicing Winnipeg FPs at the beginning and end of the period.

became apparent that while the majority of salaried FPs submit shadow or evaluation claims to Manitoba Health, there are a few physicians who are not required to do this. If FPs do not submit fee-for-service or evaluation claims, the volume of services provided by these practitioners would not be captured in this report and the absence of these data would mean that we under-report services received by residents and provided by FPs. In 2000/01 the prevalence of FPs who did not submit claims was small, and the absence of information about services provided by these practitioners is not likely to influence the results presented here. If prevalence were high enough to influence our results, the implication would be that we underestimate use and supply toward the end of the 10-year period. However, should the prevalence of these FPs increase in the coming years and more and more data be absent about their services, the Ministry and the people of Manitoba will have less and less information to monitor patterns of supply, availability and use. Should data become more incomplete, policy-makers will be less able to use historic information to monitor and better understand the population's use of health services.

Others have found that family physicians in other Canadian jurisdictions are less likely to work in inpatient units or nursing homes, or to provide obstetric or anaesthesia services (Chan, 2002b; Chan and Anderson, 1996). Indeed, between 1991/92 and 2000/01, the number of Winnipeg FPs providing services almost exclusively to inpatients declined from 66 to 52 and these practitioners represented 10 and eight per cent of all practicing Winnipeg FPs at the beginning and end of the period. But, while the number of inpatient specialists declined, total workloads among these practitioners increased from 19 to 26 FTEs or seven FTEs over the period. This increase in supply of inpatient services by FPs and concentration of inpatient "specialization" within a smaller number of FPs is evident in the increase in workload per inpatient "specialist".

In 2001, 28.6 per cent of family physicians in Canada reported that they had reduced the scope of their practice and 7.9 per cent report that they expanded the scope. Additionally, 20.7% of family physicians in Canada indicated that they were highly or somewhat likely to change the scope of their practice in the next two years (College of Family Physicians of Canada, 2001). In 2001, one-third (32.1%) of family physicians in Saskatchewan and Manitoba provided intrapartum care and delivered an average of 32.7 babies per year (Canadian Medical Association, 1999). It has been estimated that a sizable portion of family physicians in Winnipeg are now electing to practice in speciality areas such as sports medicine (Kirk, 2001). While our analysis confirm the prevalence of these various practice modes, we demonstrate that in Manitoba there has not been a real change in the patterns of practice of FPs over the period in terms of scope of diagnostic conditions served.

Throughout the period, over 90 per cent of Winnipeg FPs focused on providing primary care services to patients on an ambulatory care basis. Indeed, office visits represented 97 per cent of all visits in 2000/01 while hospital visits represented less than three per cent. This is consistent with the results of a survey that found that 75.6 per cent of family physicians in Saskatchewan and Manitoba reported their 'main practice setting' to be a 'private office or clinic' (College of Family Physicians of Canada, 2001).

Over the term, the number and FTE complement of FPs who focus primarily on ambulatory services, the scope of practice of full scope FPs, and the number and proportion of full-time FPs who focused on a more limited array of diagnostic domains, all remained stable.

We found that the number and FTE complement of FPs who focused primarily on providing ambulatory care services remained relatively unchanged over the term. And, the scope of practice of full-scope FPs, who were identified based on the diversity and balance in the types of diagnostic conditions each practitioner treats over the course of the year, also remained stable. Additionally, the number and proportion of full-time FPs who focused on a more limited array of diagnostic domains remained stable. During any one year, approximately 80 per cent of full-time FPs could be considered to be full-scope FPs and an additional 20 per cent could be considered more focused in their practice. When we compared our findings to a study that was conducted in Winnipeg in 2001 using survey methodology (Kirk, 2001) our findings about the proportion of the FP workforce who appear to have a special interest appear to be relatively similar. This study represents the first time that diagnostic information derived from administrative data have been used to assess the scope of practice of FPs.

5.4 Workloads of Winnipeg Family Physicians

Physician surveys conducted by the Canadian Medical Association (CMA) in 1982, 1986, 1990, 1993, 1995 and 2001 show a gradual decline in the number of hours physicians (FPs and specialists) spend on professional activities (Buske, 2002; Canadian Medical Association, 2002). And, the average hours worked per week declined from 1982 to 1995 by 10 per cent; in 1995 male physicians worked an average of 48.8 hours and females worked 41.2 hours (Rosser, 2002) (excluding on-call time). Interestingly, this occurred at the same time as an increase in physician to population ratios (Chan, 2002a).

In 2001 the CMA and the College of Family Physicians of Canada (CFPC) both surveyed physicians in Canada to determine the number of hours they spent engaging in different practice-related activities. Table 5.1 indicates that family physicians, on average, work between 51 and 53 hours per week on these activities, and that the majority of this time is spent providing direct patient care. Family physicians in Manitoba estimated their regular scheduled work to be 57.7 hours per week; those that work on-call estimated that they work 87.4 hours per week (College of Family Physicians of Canada,

2001). Approximately 74.5 per cent of Manitoba's family physicians provide on-call service.

Table 5.1: Average hours worked per week by FPs, 2001

	Source of Data	
	Canadian Medical Association	College of Family Physicians of Canada
Direct Patient Care	35.3 hours	28.5 hours
Indirect Patient Care (e.g., phone calls, charts, etc.)	5.3 hours	5.0 hours
Emergency room as MD on duty	-	4.9 hours
Hospital inpatient care	-	4.1 hours
House calls	-	1.3 hours
Inpatient care in other institutions	-	1.2 hours
Total (excluding on-call)*	51.1 hours	53.1 hours
On-call Work Hours	-	20.0 hours
Total work hours, those that provide on-call services		73 hours

* Total includes some areas of practice not listed here.

Source: Physician Resource Questionnaire, 2001, Canadian Medical Association. National Family Physician Workforce Survey, 2001, College of Family Physicians of Canada

By 2001, six of 10 family physicians (62.7 per cent) felt that their workloads were heavier than they would like and a recent nation-wide survey indicates that workloads have increased by two per cent since 1998 (Angus Reid Survey, 1999) and the number of hours that these physicians work each week has increased by three per cent since 1997 (Canadian Medical Association, 1999). In 2001, family physicians in Manitoba reported that they have and will continue to reduce the number of hours they work. Fifteen per cent of family physicians in Manitoba indicated in 2001 that they reduced their work hours in the past two years, and 12.1 per cent reported that they have increased. Eighteen per cent indicated that they planned to reduce their work hours in the next two years, while only four per cent expressed intent to increase. As many FPs would agree that the practice of urban FPs is different than the practice patterns of rural FPs, survey results for the province do not tell us specifically about the experiences of Winnipeg FPs.

In 2001 an average Winnipeg FP had 34.2 encounters each day, 4,193 visits per annum, and saw 1,706 different individuals each year. By comparison, full-time FPs provided 7,189 visits per annum and saw an average of 2,804 different people.

So, what are the workloads of Winnipeg FPs and have these changed over time? Workloads of an average Winnipeg FP appear to have remained relatively unchanged over time, as these measures have increased from one to three per cent, depending on the indicator. These slight gains in average workload per FP seem to be attributable to an increase in the number of days worked by part-time FPs. In 2000/01 an average Winnipeg FP had 34.2 encounters each full-time workday, 4,193 visits per annum, and saw an average of 1,706 different individuals each year. By comparison, the workloads of full-time FPs have remained stable, and these physicians provide

7,189 visits per annum and saw an average of 2,804 different people. Research conducted by others suggests that family physicians in Canada reported that they see, on average, 124 patients per week during their regular scheduled work hours (Canadian Medical Association, 1999).

FPs, between the age of 30 and 49 years in 2000/01, are providing approximately 20 per cent less visits per annum than their same age peers did 10 years before. FPs, between 50 and 59, are providing slightly less visits per annum; and FPs 60 to 69 in 2000/01 are providing over 30 per cent more than their same age peers did in 1991/92.

It is important to know that 64 per cent of the workforce was between the age of 30 and 49 in 2000/01; and this is the generation that is providing in the magnitude of 20 per cent less visits per annum than their same age peers did in 1991/92.

The most substantial changes in workload appear to be among the group of FPs who were resident in Winnipeg throughout the time and among FPs of different ages. FPs who were resident for the 10-year period, as a group, are working less. Winnipeg FPs, who were less than 30 years of age in 2000/01, are working substantially more than their same age peers did in 1991/92. FPs, between the age of 30 and 49 years in 2000/01, are providing approximately 20 per cent less visits per annum than their same age peers did 10 years before. FPs, between 50 and 59, are providing slightly less visits per annum; and FPs 60 to 69 in 2000/01 are providing over 30 per cent more than their same age peers did in 1991/92. This pattern of reductions in workload among physicians between 30 and 49 years of age in 2000/01, relative to their same age peers in 1991/92, is true among FPs who have been resident throughout the time, as well as for male and female FPs. It is not true among FPs who have not been resident throughout the time, but the average workloads of this cohort is less, on average, than those who have been Winnipeg FPs for the 10-year period. These patterns suggest that there are intergenerational differences in workloads.

It is important to know that 64 per cent of the workforce was between the age of 30 and 49 in 2000/01; and this is the generation that is providing in the magnitude of 20 per cent less visits per annum than their same age peers did in 1991/92. An additional 18 per cent of FPs were between the ages of 50 and 59 in 2000/01; and these FPs provided five per cent less visits per annum than their predecessors did at that age. When 82 per cent of the workforce has reduced the level of services they provide, relative to their same age peers 10 years prior, and the level of services in the aggregate from a relatively fixed supply of FPs remained stable, some FPs must be working more. Our analysis would suggest that it is the 11 per cent of FPs between 60 and 69 years of age in 2000/01, who have substantially higher workloads than their same age peers in 1991/92 (i.e., 33 per cent), who are keeping supply measures in the aggregate stable despite reductions in workloads assumed by FPs who are 30 to 49 years of age. While FPs less than 30 are also working more than their same age predecessors, these physicians now make up only three per cent of the workforce.

We tracked the cohort of FPs who have resided in Winnipeg throughout the time (approximately 65 per cent of the workforce), and determined that FPs who matured from approximately 30 to approximately 40 years of age during the 10-year period, and those who matured from 40 to 50 years of age during the period, slowly reduced their workloads in the order of approxi-

mately 10 per cent over the period. And, resident FPs that matured from 50 to 60 also reduced their productivity, but to a lesser extent. It is important to note, however, that this group of FPs represent approximately 65 per cent of all Winnipeg FPs in any one year and all age groups within this cohort have a very high number of visits per annum.

So, why might a generation of FPs work substantially more or less than their predecessors? Could it be that new FPs have different expectations of how much they will work and refuse to see new patients once they achieve or exceed this desired workload? Might FPs, between the ages of 30 and 49 in 2000/01, refuse to see new patients to avoid any expansion of their workloads, once they establish enough relationships with different patients? Might FPs, over the age of 59 in 2000/01, close their practices in an attempt to slow down their growing workloads, in anticipation of retirement? Also, might FPs, over the age of 59 in 2000/01, have expected declines in their workloads, like their predecessors experienced, but the opposite is happening? Might FPs, who reside in a community for a long period of time and have established relationships with an aging population, have experienced an increase in workload due to the increase in demands for care among residents who deem them to be their family physician? This information is simply not available and this type of research has not been conducted in other Canadian jurisdictions. It would appear that these issues should be the focus of further research to better understand workplace dynamics that result in FPs wanting to close their practice to new patients. FPs who feel that their workload is too heavy are more likely than others to not accept new patients (Chan, 2002a).

6.0 CONCLUSIONS

This report profiles temporal trends in, and current patterns of, supply, use and availability of FP services. But, our ability to answer the most pressing issues facing policy-makers, administrators, physicians and Manitobans who seek to understand why FPs are increasingly closing their practices, and why residents increasingly report that they don't have a family physician, is limited to the availability of historic information or the recollections of the people involved. We do know that patterns of FP use have remained relatively stable for the general population and many vulnerable populations. We know that children see FPs substantially less, and there is a substantial intensification of service provision to seniors between the age of 65 and 84 years. Indeed, one in four encounters are between a Winnipeg FP and a senior. But we don't know what Winnipeggers undergo to visit an FP (e.g., difficulty making appointments, etc.) nor anything about the appropriateness of different levels of care.

We do know that the supply and workload of FPs, in the aggregate, is relatively stable. But, some groups of FPs are working substantially less and others are working substantially more. What we don't fully understand is the complex relationships between an FP's age, the length of residence in the city and workloads, as well as how these interactions change through the passage of time.

This project was never designed or implemented to project or estimate the impact of temporal and current patterns of supply and use on the future availability of FP services. But, the age structure changes of the Winnipeg resident and FP populations, coupled with the intensification of services to seniors and intergenerational differences in workloads of FPs, point to the urgency of conducting this type of research to plan for the future. We see these issues to be the important research questions of today.

Age structure changes of the Winnipeg resident and FP populations, coupled with increasing services to seniors and intergenerational differences in workloads of FPs, point to the urgency of conducting health human resource research today to plan for the future.

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APPENDIX A: STANDARDIZED RATES

Appendix A.1: Age Category

Figure A.1a: Per Cent of Winnipeg Residents Who Visited an FP at Least Once, by Age Category, 1991/92 - 2000/01

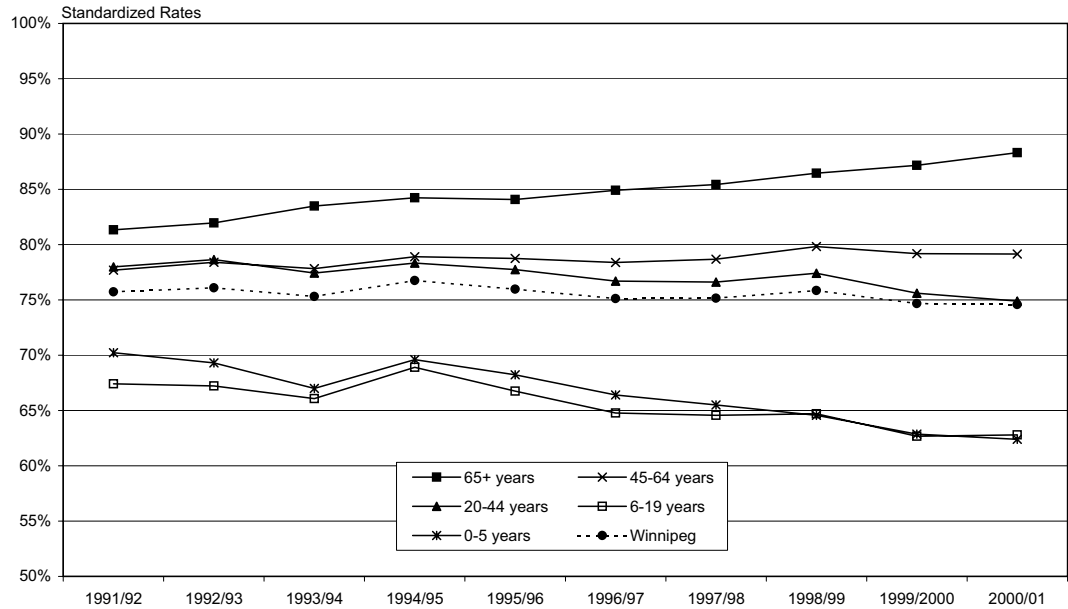


Table A.1a: Per cent of Winnipeg residents who visited an FP at least once, by age category, 1991/92 - 2000/01

Standardized Rates

Age Category (Years)											Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years 1991-2000	3 Years 1998-2000
0 - 1	73.9%	72.4%	67.8%	70.8%	68.7%	68.5%	67.0%	65.3%	63.0%	62.6%	-15%	-4%
2 - 5	68.3%	67.7%	66.6%	69.0%	68.0%	65.4%	64.8%	64.2%	62.8%	62.3%	-9%	-3%
6 - 11	62.0%	61.5%	60.4%	64.7%	62.5%	59.6%	59.3%	59.4%	57.7%	57.8%	-7%	-3%
12 - 19	71.6%	71.7%	70.5%	72.2%	70.2%	68.9%	68.8%	68.9%	66.6%	66.7%	-7%	-3%
20 - 24	81.1%	81.5%	79.4%	79.9%	79.8%	79.1%	78.9%	79.1%	77.1%	76.6%	-6%	-3%
25 - 44	77.3%	78.0%	77.0%	78.0%	77.3%	76.2%	76.1%	77.0%	75.3%	74.5%	-4%	-3%
45 - 64	77.7%	78.4%	77.8%	78.9%	78.8%	78.4%	78.7%	79.8%	79.2%	79.1%	2%	-1%
65 - 74	80.4%	81.2%	81.7%	82.5%	82.4%	83.2%	83.8%	84.9%	85.4%	86.3%	7%	2%
75 - 84	82.0%	82.4%	83.1%	83.8%	84.0%	84.9%	85.7%	86.5%	87.6%	88.9%	8%	3%
85+	84.5%	84.8%	95.4%	95.5%	94.0%	94.3%	92.5%	93.4%	93.4%	95.1%	13%	2%
Winnipeg	75.7%	76.1%	75.3%	76.7%	76.0%	75.1%	75.2%	75.8%	74.7%	74.6%	-1%	-2%

Figure A.1b: FP Visits per Winnipeg Resident per Annum,
by Age Category, 1991/92 - 2000/01

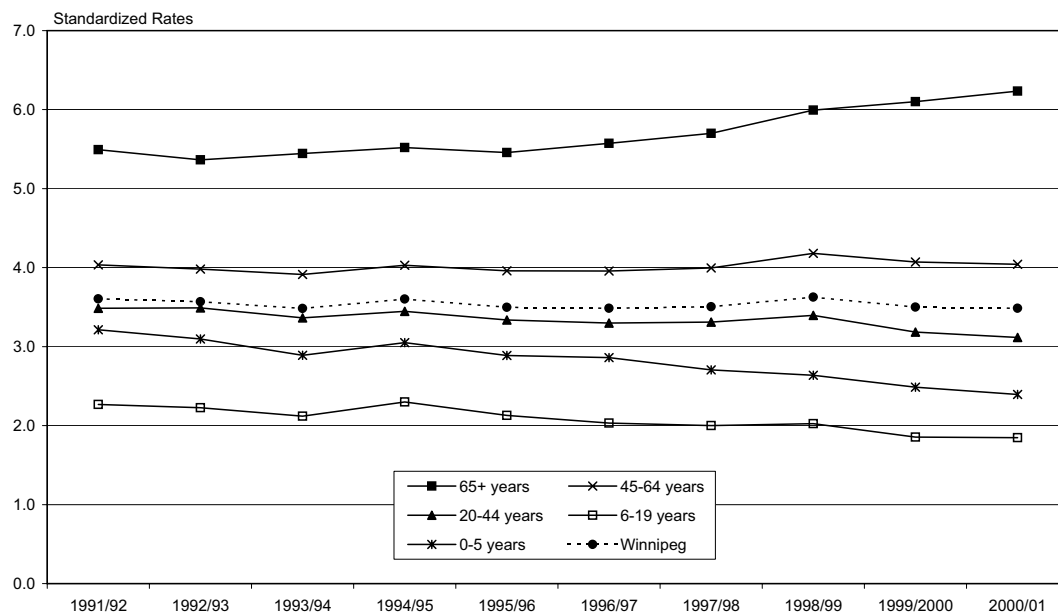


Table A.1b: FP visits per Winnipeg resident per annum, by age category, 1991/92 - 2000/01

Age Category (Years)	Standardized Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years	3 Years
	1991-2000	1998-2000										
0 - 1	4.13	3.97	3.68	3.83	3.62	3.73	3.48	3.36	3.17	3.01	-27%	-10%
2 - 5	2.73	2.65	2.50	2.67	2.53	2.44	2.35	2.31	2.18	2.11	-23%	-9%
6 - 11	1.87	1.78	1.71	2.00	1.83	1.70	1.67	1.69	1.57	1.59	-15%	-6%
12 - 19	2.57	2.57	2.44	2.54	2.37	2.30	2.26	2.29	2.08	2.05	-20%	-10%
20 - 24	3.54	3.51	3.35	3.35	3.30	3.21	3.21	3.27	3.00	2.92	-18%	-11%
25 - 44	3.47	3.48	3.37	3.47	3.35	3.32	3.33	3.42	3.22	3.16	-9%	-8%
45 - 64	4.04	3.98	3.91	4.03	3.96	3.96	4.00	4.18	4.07	4.04	0%	-3%
65 - 74	4.92	4.85	4.91	4.99	4.91	5.03	5.13	5.40	5.44	5.47	11%	1%
75 - 84	5.77	5.67	5.75	5.81	5.78	5.89	6.08	6.34	6.49	6.69	16%	6%
85+	7.73	7.07	7.28	7.31	7.11	7.21	7.13	7.50	7.58	7.85	2%	5%
Winnipeg	3.60	3.57	3.48	3.60	3.50	3.48	3.50	3.63	3.50	3.49	-3%	-4%

Figure A.1c: Number of Different FPs Seen by Winnipeg Residents, by Age Category, 1991/92 - 2000/01

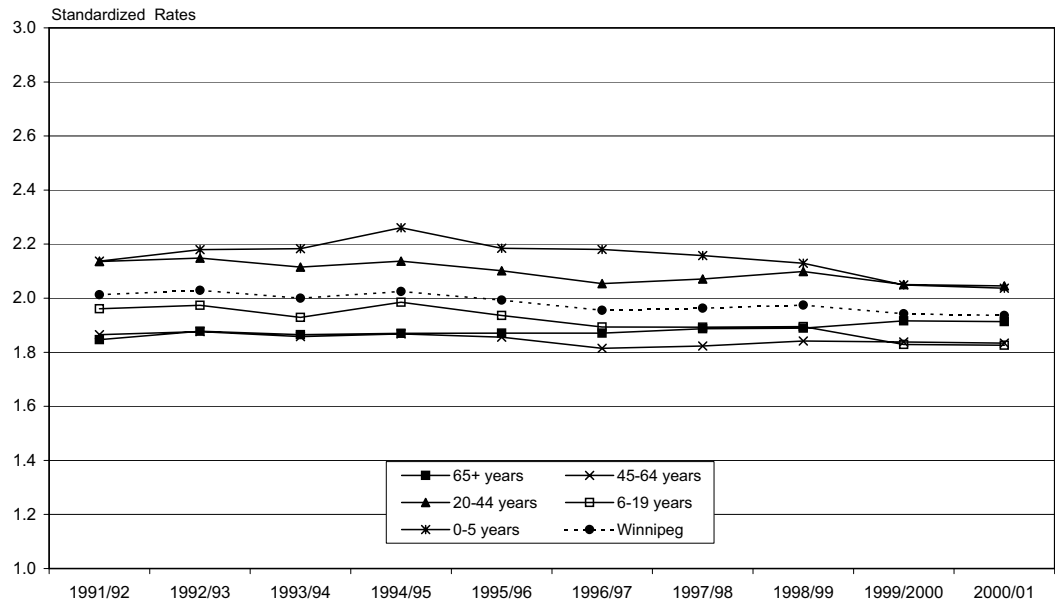


Table A.1c: Number of different FPs seen by Winnipeg residents per annum, by age category, 1991/92 - 2000/01

Age Category (Years)	Standardized Rates										Per Cent Change	
											10 Years	3 Years
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	1991-2000	1998-2000
0 - 1	2.2	2.3	2.4	2.4	2.3	2.4	2.3	2.3	2.2	2.2	0%	-4%
2 - 5	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	-5%	0%
6 - 11	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.7	1.7	-6%	-6%
12 - 19	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	1.9	1.9	-10%	-5%
20 - 24	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	-8%	-4%
25 - 44	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	-5%	-5%
45 - 64	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	-5%	0%
65 - 74	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	6%	6%
75 - 84	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	5%	5%
85+	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	5%	5%
Winnipeg	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	-5%	-5%

Appendix A.2: Gender Category

Figure A.2a: Per Cent of Winnipeg Residents Who Visited an FP at Least Once, by Gender, 1991/92 - 2000/01

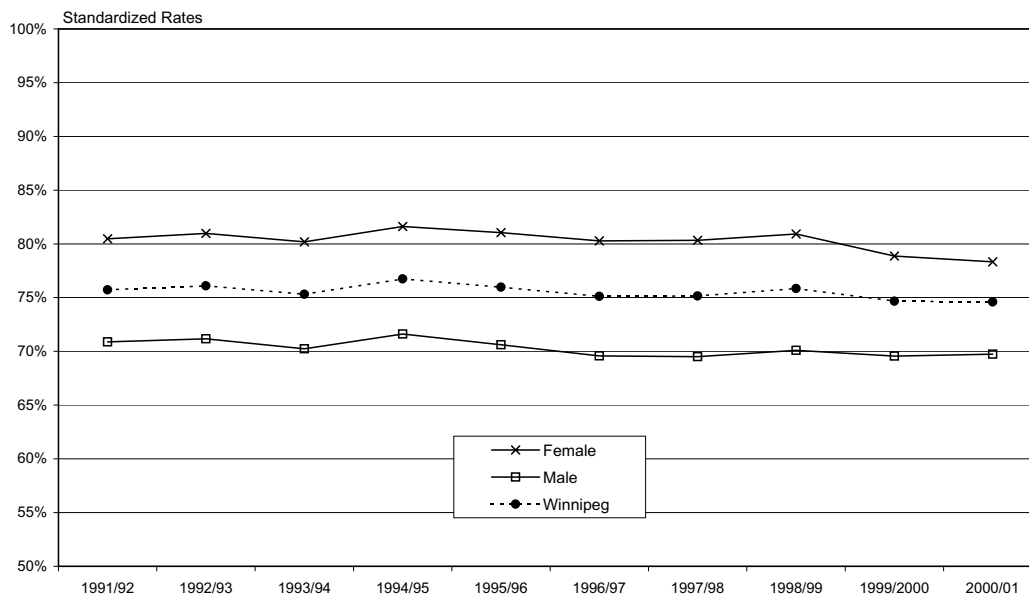


Table A.2a: Per cent of Winnipeg residents who visited an FP at least once, by gender, 1991/92 - 2000/01

Standardized Rates

											Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years 1991-2000	3 Years 1998-2000
Female	80.5%	81.0%	80.2%	81.6%	81.0%	80.3%	80.3%	80.9%	78.9%	78.3%	-3%	-3%
Male	70.9%	71.2%	70.2%	71.6%	70.6%	69.6%	69.5%	70.1%	69.6%	69.7%	-2%	-1%
Winnipeg	75.7%	76.1%	75.3%	76.7%	76.0%	75.1%	75.2%	75.8%	74.7%	74.6%	-1%	-2%

Figure A.2b: FP Visits per Winnipeg Resident per Annum, by Gender, 1991/92 - 2000/01

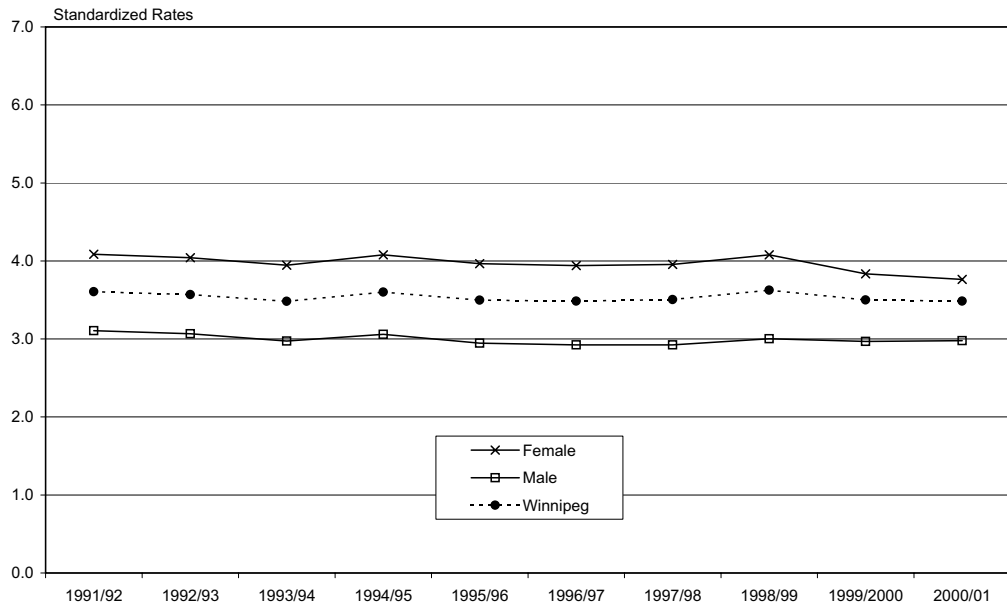


Table A.2b: FP visits per Winnipeg resident per annum, by gender, 1991/92 - 2000/01

	Standardized Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years	3 Years
	1991-2000	1998-2000										
Female	4.09	4.04	3.94	4.08	3.97	3.94	3.96	4.08	3.83	3.76	-8%	-8%
Male	3.11	3.07	2.97	3.06	2.95	2.92	2.93	3.00	2.97	2.98	-4%	-1%
Winnipeg	3.60	3.57	3.48	3.60	3.50	3.48	3.50	3.63	3.50	3.49	-3%	-4%

Appendix A.3: Health Conditions

Figure A.3a: FP Visits per Winnipeg Resident per Annum, by Health Condition, 1992/93 - 2000/01

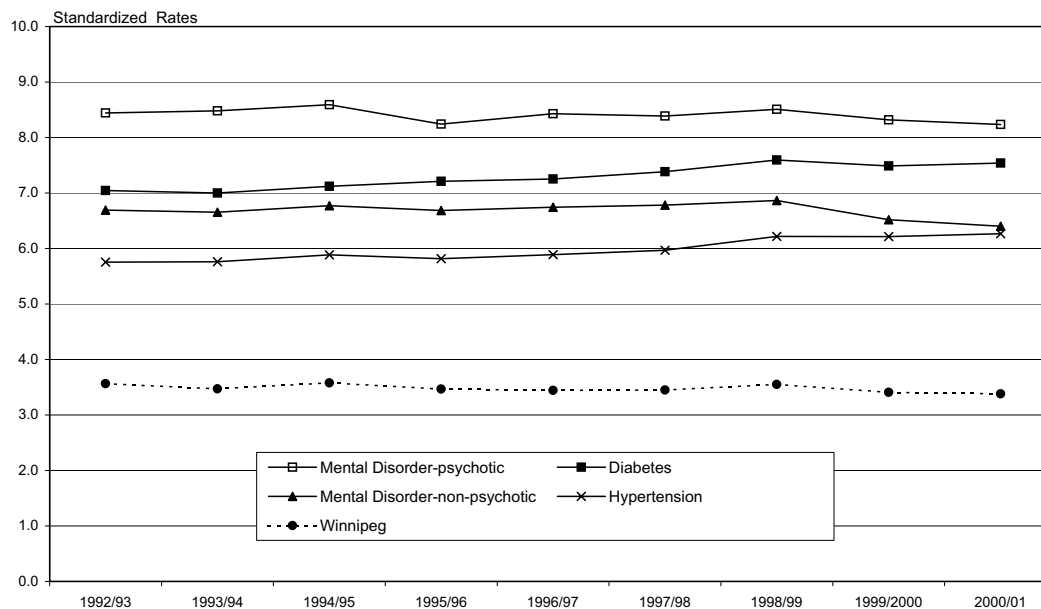


Table A.3a: FP visits per Winnipeg resident per annum, by health condition, 1992/93 - 2000/01

Standardized Rates

Health Condition	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
										9 Years 1992-2000	3 Years 1998-2000
Mental Disorder-Psychotic	8.44	8.48	8.59	8.24	8.43	8.39	8.51	8.32	8.23	-2%	-3%
Diabetes	7.05	7.00	7.12	7.21	7.25	7.38	7.59	7.49	7.54	7%	-1%
Mental Disorder-Non-Psychotic	6.69	6.65	6.77	6.69	6.74	6.78	6.87	6.52	6.40	-4%	-7%
Hypertension	5.75	5.76	5.88	5.82	5.89	5.97	6.22	6.21	6.27	9%	1%

Appendix A.4: Vulnerable Populations

Figure A.4a: FP Visits per Winnipeg Resident per Annum, by Vulnerable Population, 1991/92 - 1999/2000

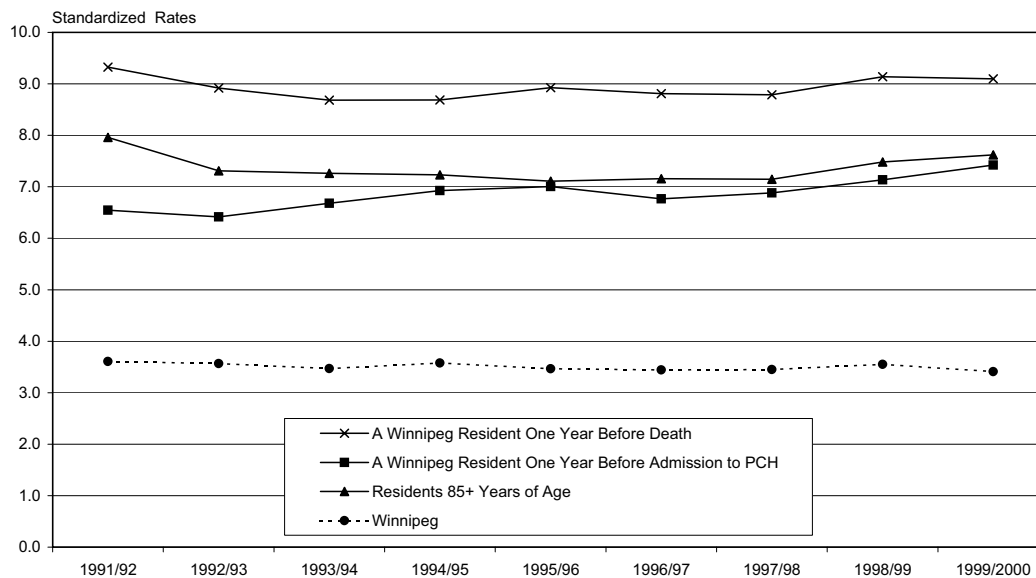


Table A.4a: FP visits per Winnipeg resident per annum, by vulnerable population, 1991/92 - 1999/2000

Standardized Rates

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	Per Cent Change	
										For All Available Years	For Last 3 Years Available
A Winnipeg Resident One Year Before Death	9.32	8.92	8.68	8.69	8.93	8.81	8.79	9.14	9.10	-2%	4%
A Winnipeg Resident One Year Before Admission to PCH	6.55	6.42	6.68	6.93	7.00	6.77	6.88	7.14	7.42	13%	8%
Residents 85+ Years of Age	7.96	7.31	7.26	7.23	7.11	7.16	7.15	7.48	7.62	-4%	7%

Figure A.4b: Number of Different FPs Seen by Winnipeg Residents per Annum, by Vulnerable Population, 1991/92 - 1999/2000

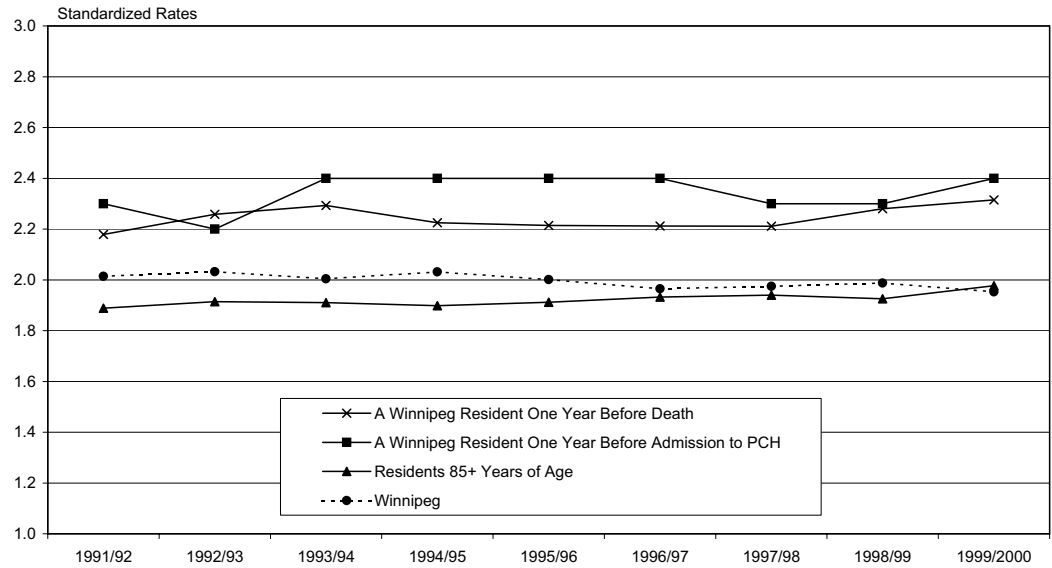
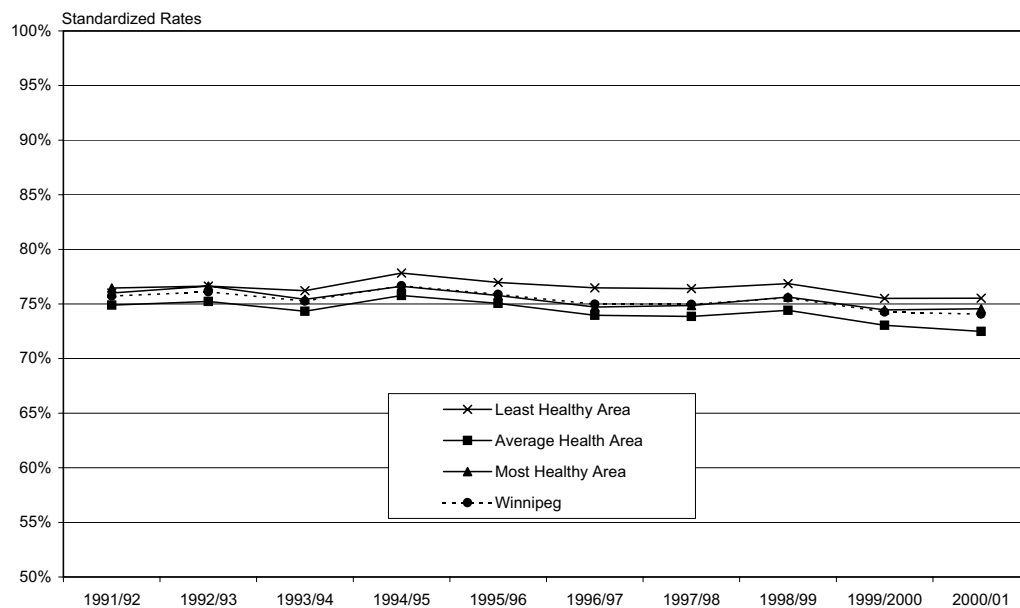


Table A.4b: Number of different FPs seen by a Winnipeg resident per annum, by vulnerable population, 1991/92 - 1999/2000

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	Per Cent Change	
										For All Available Years	For Last 3 Years Available
A Winnipeg Resident One Year Before Death	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.3	2.3	5%	5%
A Winnipeg Resident One Year Before Admission to PCH	2.3	2.2	2.4	2.4	2.4	2.4	2.3	2.3	2.4	4%	4%
Residents 85+ Years of Age	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	5%	5%

Appendix A.5: Area Category

Figure A.5a: Per Cent of Winnipeg Residents Who Visited an FP at Least Once, by Population Health Status, 1991/92 - 2000/01

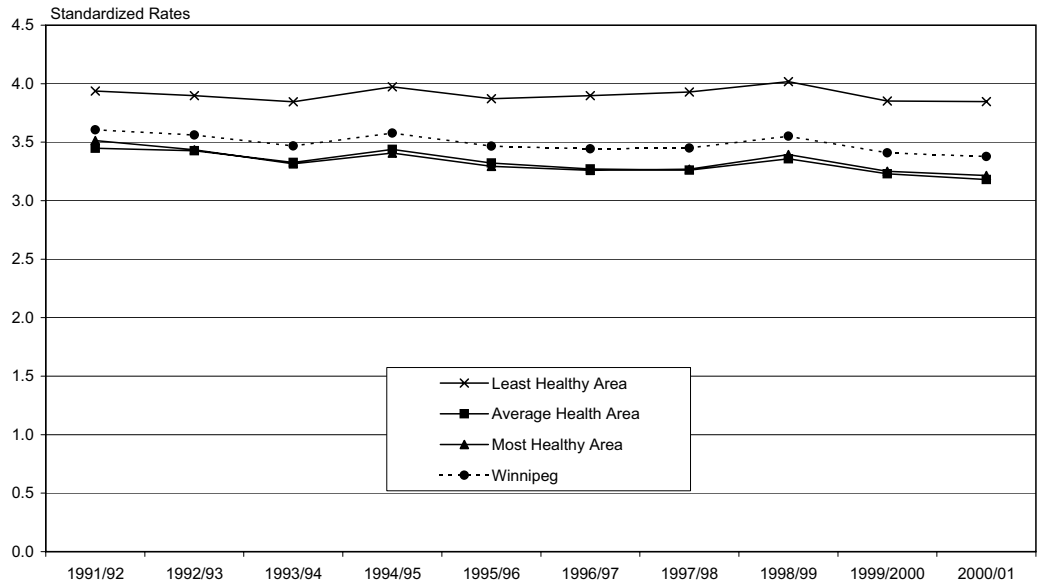


Most Healthy Area: Fort Garry, Assiniboine South, St.Vital, St. Boniface
Average Health Area: River Heights, Seven Oaks, St.James-Assiniboia, River East
Least Healthy Area: Transcona, Inkster, Downtown, Point Douglas

Table A.5a: Per cent of Winnipeg residents who visited an FP at least once, by population health status, 1991/92 - 2000/01

Population Health Status of Community Area	Standardized Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years	3 Years
	1991-2000	1998-2000										
Least Healthy Area	76.0%	76.6%	76.2%	77.8%	77.0%	76.5%	76.4%	76.9%	75.5%	75.5%	-1%	-2%
Average Health Area	74.9%	75.2%	74.3%	75.8%	75.1%	74.0%	73.9%	74.4%	73.0%	72.5%	-3%	-3%
Most Healthy Area	76.5%	76.6%	75.4%	76.6%	75.8%	74.7%	74.9%	75.6%	74.5%	74.6%	-2%	-1%

Figure A.5b: FP Visits per Winnipeg Resident per Annum, by Population Health Status, 1991/92 - 2000/01

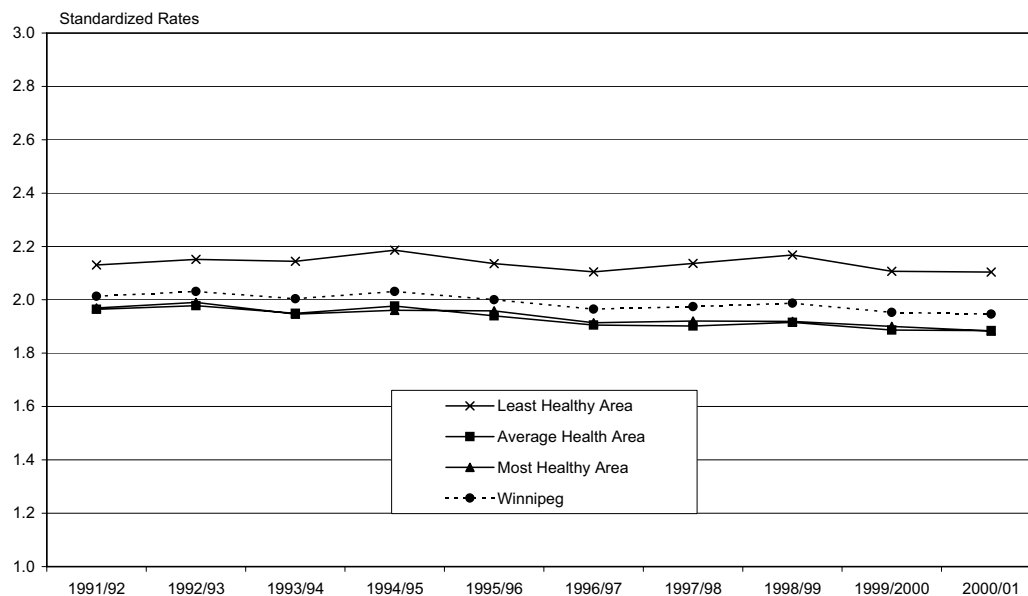


Most Healthy Area: Fort Garry, Assiniboine South, St.Vital, St. Boniface
Average Health Area: River Heights, Seven Oaks, St.James-Assiniboia, River East
Least Healthy Area: Transcona, Inkster, Downtown, Point Douglas

Table A.5b: FP visits per Winnipeg resident per annum, by population health status, 1991/92 - 2000/01

Population Health Status of Community Area	Standardized Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years 1991-2000	3 Years 1998-2000
	Least Healthy Area	3.94	3.90	3.85	3.97	3.87	3.90	3.93	4.02	3.85	3.85	-2%
Average Health Area	3.45	3.43	3.33	3.44	3.32	3.27	3.26	3.36	3.23	3.18	-8%	-5%
Most Healthy Area	3.51	3.43	3.31	3.41	3.29	3.26	3.27	3.39	3.25	3.21	-9%	-5%

Figure A.5c: Number of Different FPs Seen by Winnipeg Residents per Annum, by Population Health Status, 1991/92 - 2000/01



Most Healthy Area: Fort Garry, Assiniboine South, St.Vital, St. Boniface
Average Health Area: River Heights, Seven Oaks, St.James-Assiniboia, River East
Least Healthy Area: Transcona, Inkster, Downtown, Point Douglas

Table A.5c: Number of different FPs seen by Winnipeg residents per annum, by population health status, 1991/92 - 2000/01

Population Health Status of Community Area	Standardized Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years 1991-2000	3 Years 1998-2000
Least Healthy Area	2.1	2.2	2.1	2.2	2.1	2.1	2.1	2.2	2.1	2.1	0%	-5%
Average Health Area	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	-5%	0%
Most Healthy Area	2.0	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.9	1.9	-5%	0%

APPENDIX B: CRUDE RATES

Appendix B.1: Age Category

Figure B.1a: Per Cent of Winnipeg Residents Who Visited an FP at Least Once, by Age Category, 1991/92 - 2000/01

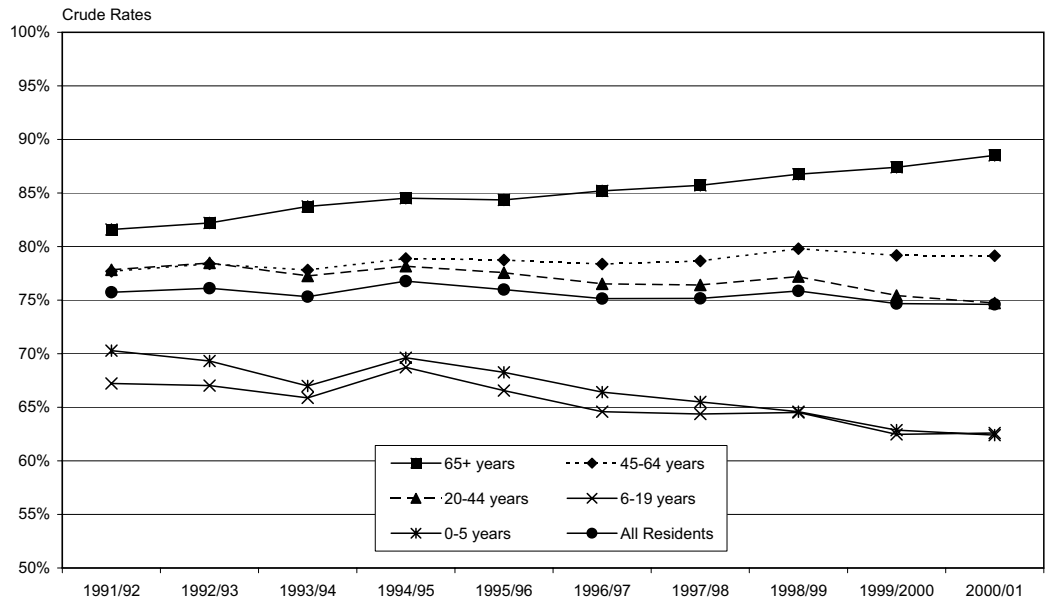


Table B.1a: Per cent of Winnipeg residents who visited an FP at least once, by age category, 1991/92 - 2000/01

Age Category (Years)	Crude Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years 1991-2000	3 Years 1998-2000
0 - 1	74.0%	72.3%	67.8%	70.8%	68.7%	68.6%	67.0%	65.3%	63.0%	62.6%	-15%	-4%
2 - 5	68.4%	67.8%	66.6%	69.0%	68.0%	65.4%	64.8%	64.2%	62.8%	62.3%	-9%	-3%
6 - 11	61.9%	61.4%	60.4%	64.6%	62.4%	59.5%	59.3%	59.3%	57.6%	57.7%	-7%	-3%
12 - 19	71.3%	71.4%	70.2%	72.0%	69.9%	68.6%	68.4%	68.6%	66.3%	66.4%	-7%	-3%
20 - 24	81.0%	81.5%	79.3%	79.7%	79.7%	78.9%	78.8%	78.9%	77.0%	76.5%	-6%	-3%
25 - 44	77.1%	77.8%	76.8%	77.8%	77.1%	76.0%	75.9%	76.8%	75.1%	74.4%	-3%	-3%
45 - 64	77.7%	78.4%	77.8%	78.9%	78.7%	78.4%	78.7%	79.8%	79.2%	79.1%	2%	-1%
65 - 74	80.6%	81.4%	81.9%	82.7%	82.6%	83.4%	84.0%	85.1%	85.5%	86.4%	7%	2%
75 - 84	82.1%	82.5%	83.3%	84.0%	84.2%	85.1%	86.0%	86.8%	87.9%	89.0%	8%	3%
85+	85.1%	85.4%	94.2%	94.5%	93.0%	93.0%	92.2%	93.0%	93.1%	94.5%	11%	2%
Winnipeg	75.7%	76.1%	75.3%	76.8%	76.0%	75.1%	75.2%	75.9%	74.7%	74.6%	-1%	-2%

Figure B.1b: FP Visits per Winnipeg Resident per Annum,
by Age Category, 1991/92 - 2000/01

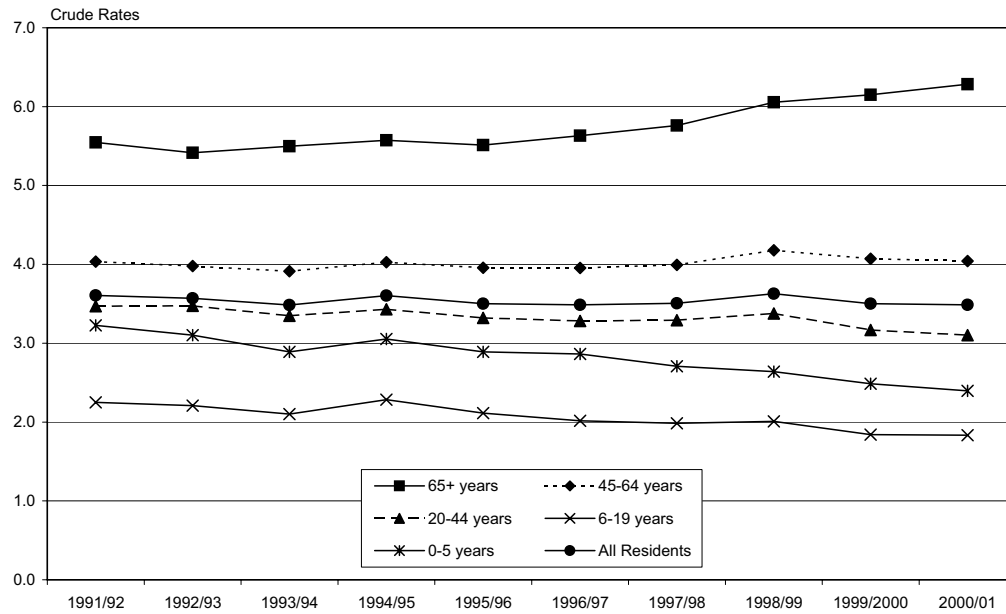


Table B.1b: FP visits per Winnipeg resident per annum, by age category, 1991/92 - 2000/01

Age Category (Years)	Crude Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	1991-2000	1998-2000
0 - 1	4.13	3.98	3.68	3.84	3.63	3.73	3.48	3.36	3.17	3.01	-27%	-10%
2 - 5	2.75	2.65	2.50	2.67	2.53	2.44	2.35	2.32	2.18	2.11	-23%	-9%
6 - 11	1.87	1.78	1.71	1.99	1.83	1.70	1.67	1.68	1.56	1.58	-15%	-6%
12 - 19	2.55	2.54	2.41	2.51	2.34	2.27	2.24	2.26	2.06	2.03	-20%	-10%
20 - 24	3.53	3.50	3.33	3.33	3.28	3.20	3.20	3.26	2.99	2.91	-18%	-11%
25 - 44	3.45	3.47	3.35	3.45	3.33	3.30	3.31	3.40	3.21	3.14	-9%	-8%
45 - 64	4.03	3.98	3.91	4.03	3.96	3.96	3.99	4.18	4.07	4.04	0%	-3%
65 - 74	4.94	4.87	4.94	5.01	4.94	5.06	5.16	5.43	5.46	5.48	11%	1%
75 - 84	5.81	5.70	5.78	5.85	5.81	5.92	6.12	6.38	6.52	6.73	16%	5%
85+	7.98	7.33	7.45	7.45	7.26	7.30	7.24	7.58	7.68	7.96	0%	5%
Winnipeg	3.61	3.57	3.48	3.60	3.50	3.49	3.51	3.63	3.50	3.49	-3%	-4%

Figure B.1c: Number of Different FPs Seen by Winnipeg Residents per Annum, by Age Category, 1991/92 - 2000/01

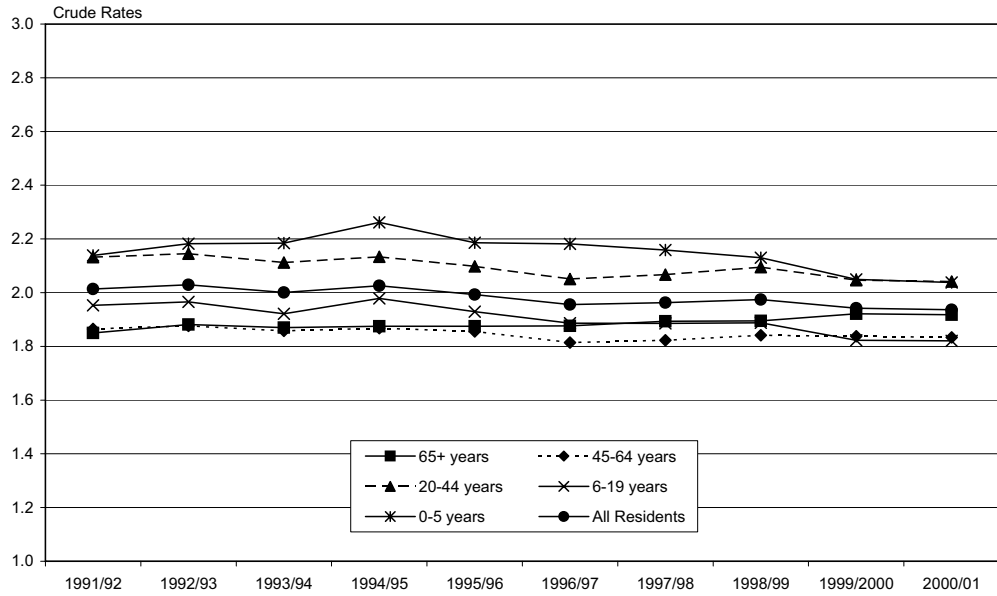


Table B.1c: Number of different FPs seen by Winnipeg residents per annum, by age category, 1991/92 - 2000/01

Crude Rates

Age Category (Years)											Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	1991-2000	1998-2000
0-1	2.2	2.3	2.4	2.4	2.3	2.4	2.3	2.3	2.2	2.2	0%	-4%
2-5	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.0	2.0	2.0	-5%	0%
6-11	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.7	1.7	-6%	-6%
12-19	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	-10%	-5%
20-24	2.4	2.4	2.3	2.3	2.3	2.2	2.3	2.3	2.2	2.2	-8%	-4%
25-44	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.0	2.0	-5%	-5%
45-64	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	-5%	0%
65-74	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	6%	0%
75-84	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	5%	5%
85+	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	5%	5%
Winnipeg	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	-5%	-5%

Appendix B.2: Gender Category

Figure B.2a: Per Cent of Winnipeg Residents Who Visited an FP at Least Once, by Gender, 1991/92 - 2000/01

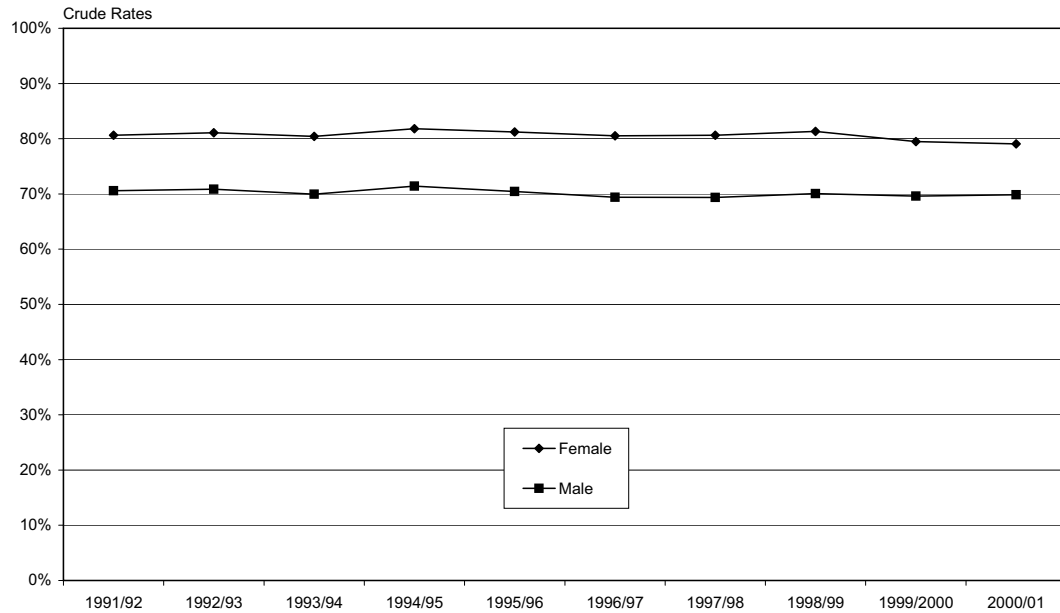


Table B.2a: Per cent of Winnipeg residents who visited an FP at least once, by gender, 1991/92 - 2000/01

Crude Rates

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
											10 Years	3 Years
Female	80.6%	81.1%	80.4%	81.8%	81.2%	80.5%	80.6%	81.3%	79.5%	79.1%	-2%	-3%
Male	70.6%	70.8%	69.9%	71.4%	70.4%	69.4%	69.4%	70.1%	69.6%	69.9%	-1%	0%

Figure B.2b: FP Visits per Winnipeg Resident per Annum, by Gender, 1991/92 - 2000/01

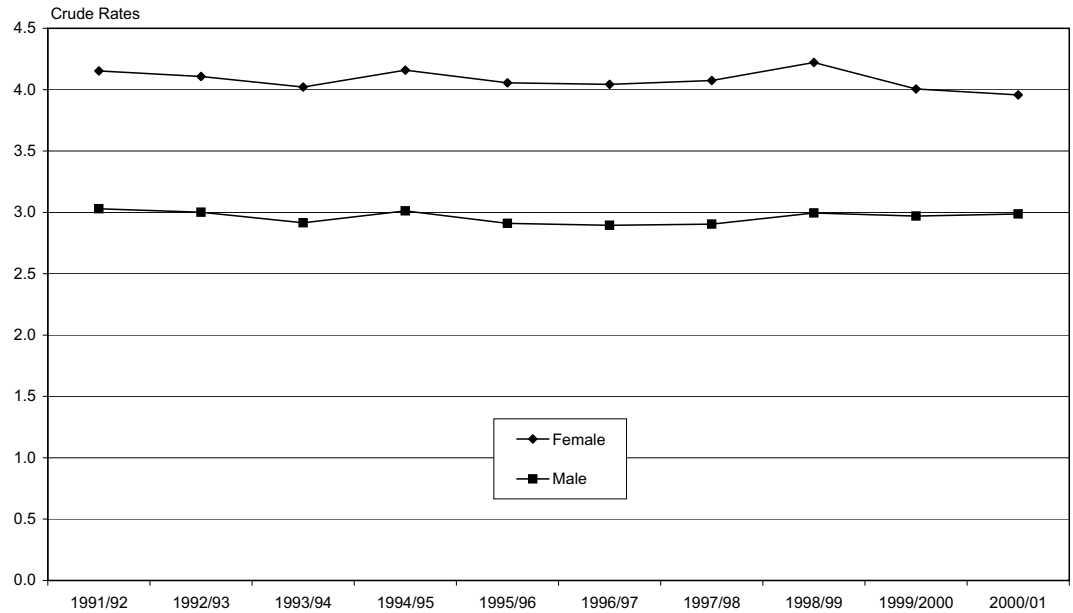


Table B.2b: FP visits per Winnipeg resident per annum, by gender, 1991/92 - 2000/01

	Crude Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years	3 Years
Female	4.15	4.11	4.02	4.16	4.06	4.04	4.07	4.22	4.01	3.96	-5%	-6%
Male	3.03	3.00	2.92	3.01	2.91	2.89	2.90	3.00	2.97	2.99	-1%	0%

Appendix B.3: Type of Physician

Figure B.3a: Physician Visits per Winnipeg Resident Less than 12 Years of Age, by Type of Physician, 1991/92 - 2000/01

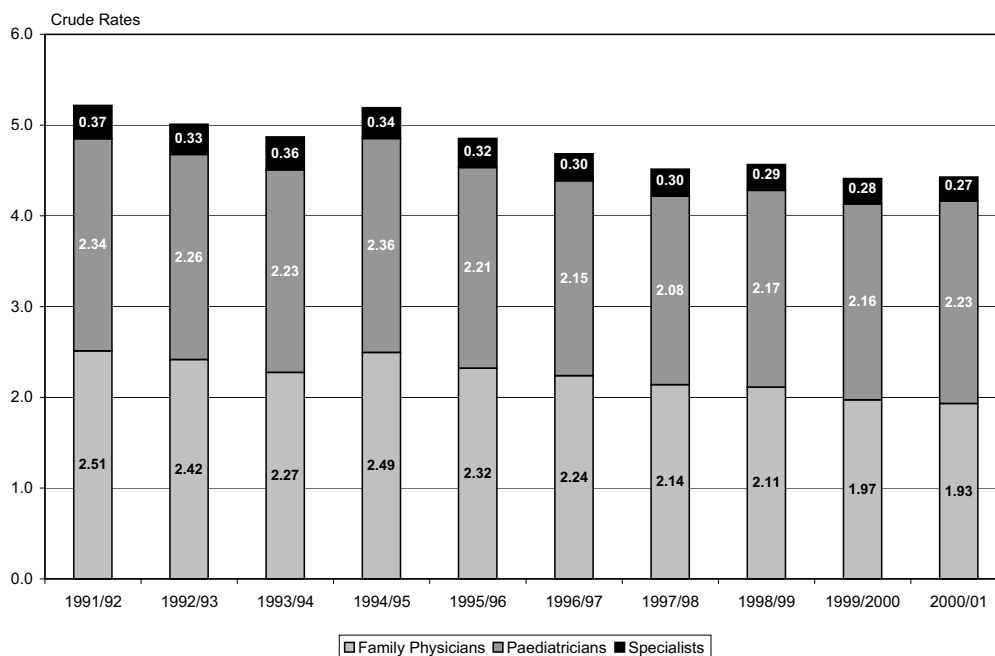


Figure B.3b: Physician Visits per Winnipeg Resident 13-19 Years of Age, by Type of Physician, 1991/92 - 2000/01

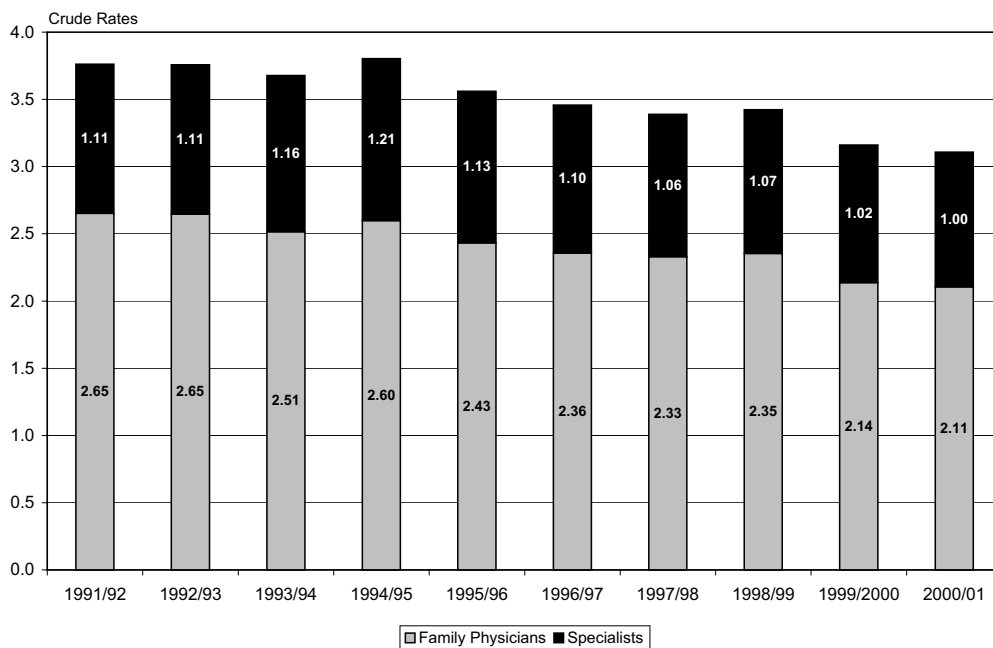


Figure B.3c: Physician Visits per Winnipeg Resident 85+ Years of Age, by Type of Physician, 1991/92 - 2000/01

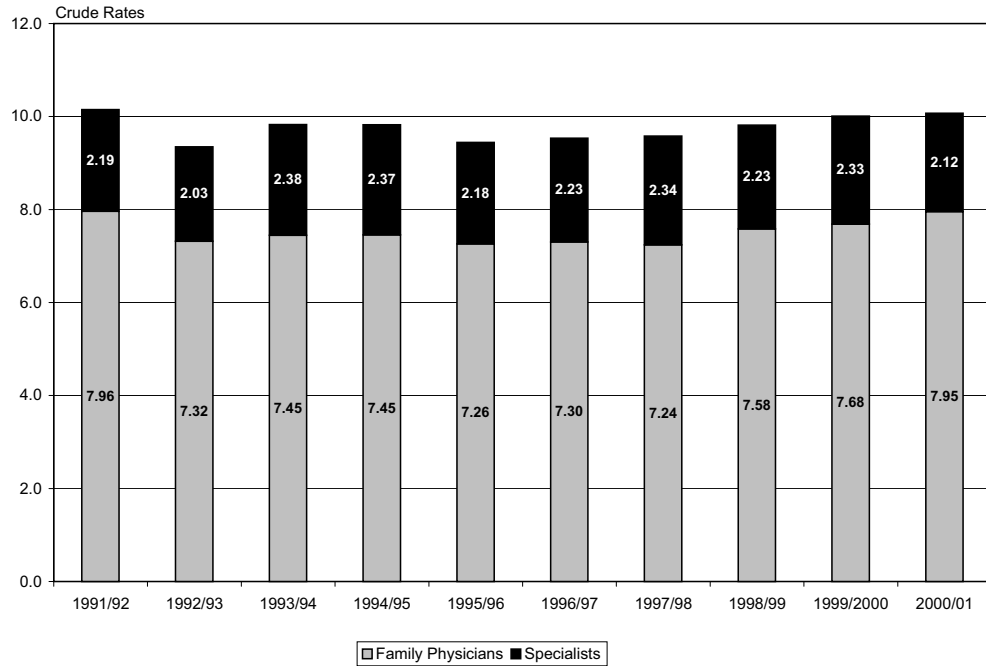


Table B.3: Physician visits per Winnipeg resident by type of physician, 1991/92 - 2000/01

Crude Rates

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	Per Cent Change	
											10 Years	3 Years
Visits Per												
Child Resident												
Family Physician	2.51	2.42	2.27	2.49	2.32	2.24	2.14	2.11	1.97	1.93	-23%	-9%
Paediatrician	2.34	2.26	2.23	2.36	2.21	2.15	2.08	2.17	2.16	2.23	-5%	3%
Specialist	0.37	0.33	0.36	0.34	0.32	0.30	0.30	0.29	0.28	0.27	-27%	-7%
Visits Per												
Adolescent Resident												
Family Physician	2.65	2.65	2.51	2.60	2.43	2.36	2.33	2.35	2.14	2.11	-20%	-10%
Specialist	1.11	1.11	1.16	1.21	1.13	1.10	1.06	1.07	1.02	1.00	-10%	-7%
Visits Per												
Senior Resident												
Family Physician	7.96	7.32	7.45	7.45	7.26	7.30	7.24	7.58	7.68	7.95	0%	5%
Specialist	2.19	2.03	2.38	2.37	2.18	2.23	2.34	2.23	2.33	2.12	-3%	-5%

Appendix B.4: Vulnerable Populations

Figure B.4a: FP Visits per Winnipeg Resident per Annum, by Vulnerable Population, 1991/92 - 2000/01

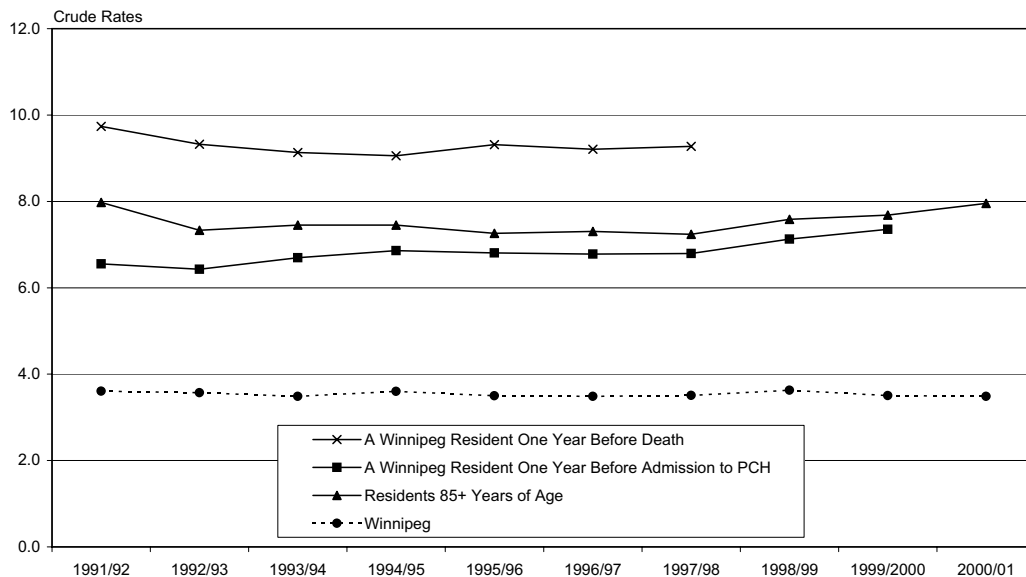


Table B.4a: FP visits per Winnipeg resident per annum, by vulnerable population, 1991/92 - 2000/01

Crude Rates

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
											For All Available Years	For Last Available 3 Years
A Winnipeg Resident One Year Before Death	9.7	9.3	9.1	9.1	9.3	9.2	9.3				-4%	0%
A Winnipeg Resident One Year Before Admission to	6.6	6.4	6.7	6.9	6.8	6.8	6.8	7.1	7.4		12%	9%
Residents 85+ Years of Age	8.0	7.3	7.4	7.5	7.3	7.3	7.2	7.6	7.7	8.0	0%	5%
Winnipeg	3.6	3.6	3.5	3.6	3.5	3.5	3.5	3.6	3.5	3.5	-3%	-3%

Figure B.4b: Number of Different FPs Seen by Winnipeg Residents per Annum, by Vulnerable Population, 1991/92 - 2000/01

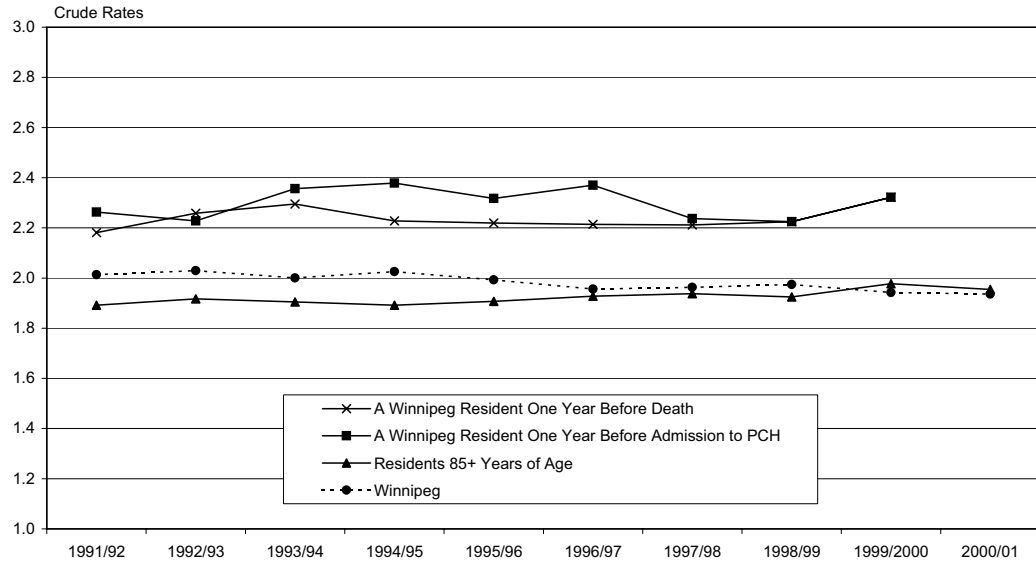


Table B.4b: Number of different FPs seen by Winnipeg residents per annum, by vulnerable population, 1991/92 - 2000/01

Crude Rates

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
											For All Available Years	For Last Available 3 Years
A Winnipeg Resident One Year Before Death	2.2	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.3	5%	5%
A Winnipeg Resident One Year Before Admission to PCH	2.3	2.2	2.4	2.4	2.3	2.4	2.2	2.2	2.3	2.3	0%	5%
Residents 85+ Years of Age	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	5%	5%
Winnipeg	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	-5%	-5%

Appendix B.5: Area Category

Table B.5a: Per cent of Winnipeg residents who visited an FP at least once, by area, 1991/92 - 2000/01

Area	Crude Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years	3 Years
	1991-2000	1998-2000										
FORT GARRY	74.3%	75.0%	73.5%	74.2%	73.4%	71.8%	72.0%	73.2%	72.2%	72.8%	-2%	-1%
ASSINIBOINE SOUTH	75.6%	75.5%	74.5%	76.3%	75.7%	75.4%	74.8%	75.3%	73.5%	73.9%	-2%	-2%
ST. VITAL	77.6%	77.4%	76.3%	77.7%	76.4%	75.4%	76.2%	77.3%	76.8%	76.8%	-1%	-1%
ST. BONIFACE	77.5%	78.0%	77.1%	78.6%	78.1%	77.3%	77.4%	78.2%	76.7%	76.7%	-1%	-2%
RIVER HEIGHTS	75.3%	75.9%	74.9%	76.4%	76.2%	74.9%	75.1%	75.7%	74.2%	74.2%	-1%	-2%
SEVEN OAKS	75.0%	75.7%	75.6%	76.5%	75.8%	74.5%	74.6%	75.2%	74.6%	73.9%	-1%	-2%
ST. JAMES-ASSINIBOIA	77.1%	78.5%	77.5%	78.9%	77.9%	77.5%	77.1%	78.1%	76.9%	76.5%	-1%	-2%
RIVER EAST	74.1%	73.5%	72.5%	74.3%	73.6%	72.8%	72.7%	73.3%	72.0%	71.6%	-3%	-2%
TRANSCONA	78.4%	77.9%	77.5%	79.1%	77.9%	77.8%	77.3%	78.4%	75.7%	74.9%	-4%	-4%
INKSTER	73.6%	74.3%	73.7%	75.0%	74.5%	73.5%	73.6%	74.4%	73.2%	74.2%	1%	0%
DOWNTOWN	75.5%	76.3%	75.9%	77.3%	76.2%	75.4%	75.1%	75.6%	74.7%	74.8%	-1%	-1%
POINT DOUGLAS	75.5%	76.5%	76.4%	78.4%	78.0%	77.9%	77.9%	78.2%	77.4%	77.5%	3%	-1%
WINNIPEG	75.7%	76.1%	75.3%	76.7%	76.0%	75.1%	75.1%	75.8%	74.7%	74.6%	-1%	-2%

Table B.5b: FP visits per Winnipeg resident per annum, by area, 1991/92 - 2000/01

Area	Crude Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years	3 Years
	1991-2000	1998-2000										
FORT GARRY	3.16	3.10	2.98	3.06	2.95	2.87	2.90	3.06	2.97	2.98	-6%	-3%
ASSINIBOINE SOUTH	3.45	3.36	3.25	3.41	3.37	3.35	3.31	3.41	3.29	3.30	-4%	-3%
ST. VITAL	3.56	3.48	3.36	3.44	3.34	3.36	3.43	3.59	3.46	3.42	-4%	-5%
ST. BONIFACE	3.68	3.68	3.61	3.73	3.61	3.60	3.60	3.73	3.57	3.51	-5%	-6%
RIVER HEIGHTS	3.58	3.57	3.49	3.60	3.47	3.45	3.51	3.61	3.47	3.46	-3%	-4%
SEVEN OAKS	3.63	3.64	3.55	3.65	3.54	3.50	3.52	3.64	3.60	3.52	-3%	-3%
ST. JAMES-ASSINIBOIA	3.62	3.69	3.61	3.77	3.70	3.63	3.51	3.64	3.58	3.59	-1%	-1%
RIVER EAST	3.34	3.24	3.15	3.26	3.14	3.14	3.19	3.32	3.15	3.11	-7%	-6%
TRANSCONA	3.48	3.38	3.36	3.56	3.43	3.40	3.37	3.51	3.25	3.20	-8%	-9%
INKSTER	3.46	3.47	3.37	3.40	3.27	3.22	3.29	3.37	3.33	3.37	-3%	0%
DOWNTOWN	4.14	4.13	4.01	4.18	4.08	4.13	4.19	4.23	4.08	4.13	0%	-2%
POINT DOUGLAS	4.10	4.04	4.06	4.19	4.14	4.23	4.28	4.45	4.33	4.28	4%	-4%
WINNIPEG	3.61	3.57	3.48	3.60	3.50	3.49	3.51	3.63	3.50	3.49	-3%	-4%

Table B.5c: Number of different FPs seen by Winnipeg residents per annum, by area, 1991/92 - 2000/01

Area	Crude Rates										Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	10 Years	3 Years
	1991-2000	1998-2000										
FORT GARRY	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	-5%	0%
ASSINIBOINE SOUTH	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	0%	0%
ST. VITAL	2.1	2.1	2.0	2.0	2.1	2.0	2.0	2.0	1.9	1.9	-10%	-5%
ST. BONIFACE	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	-5%	-5%
RIVER HEIGHTS	2.1	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	-5%	0%
SEVEN OAKS	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	0%	-5%
ST. JAMES-ASSINIBOIA	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	-5%	0%
RIVER EAST	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	-5%	0%
TRANSCONA	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.8	-10%	-10%
INKSTER	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	0%	0%
DOWNTOWN	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	-4%	0%
POINT DOUGLAS	2.1	2.2	2.2	2.3	2.2	2.2	2.2	2.3	2.2	2.2	5%	-4%
WINNIPEG	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	-5%	-5%

APPENDIX C: PHYSICIAN SUPPLY

Appendix C.1: Supply of Family Physicians

Table C.1a: Supply of Winnipeg FPs, 1991/92 - 2000/01

Number of FPs	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change		
											For All Available Years	3 Years 1998-2000	
Eligible to bill													
Manitoba Health	--	--	--	744	701	703	657	662	654	665	-11%	0%	
By Billing Status													
Practicing FPs*	634	632	648	654	651	614	597	590	599	605	-5%	3%	
Billed >= \$35,000 per year	443	447	449	446	448	442	435	440	446	459	4%	4%	
By Workload													
Worked part-time	355	361	389	379	390	351	347	329	336	337	-5%	2%	
Active FPs**	332	332	324	333	318	317	315	323	315	318	-4%	-2%	
Worked full-time**	279	271	259	275	261	263	250	261	263	268	-4%	3%	
By Scope of Practice													
Non-ambulatory focus	66	61	46	44	54	44	49	53	57	52	-21%	-2%	
Ambulatory focus	568	571	602	610	597	570	548	537	542	553	-3%	3%	

Note: *Practicing FPs = Billed Manitoba Health;

**Active FPs = Practitioners who worked 0.8 full-time equivalent or more;

***Worked full-time = Practitioners who worked 1.0 full-time equivalent or more.

Table C.1b: Full-time-equivalent measures of Winnipeg FPs, 1991/92 - 2000/01

FTE Measures of FPs	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change		
											10 Years 1991-2000	3 Years 1998-2000	
All Winnipeg	470	463	454	460	445	439	438	448	445	454	-3%	1%	
By Workload													
Worked part-time	135	141	150	137	142	134	142	137	132	134	-1%	-2%	
Worked full-time	102	96	90	105	108	113	93	87	84	97	-5%	12%	
Worked more than full-time	233	226	214	218	195	192	203	224	229	223	-4%	0%	
By Scope of Practice													
Non-ambulatory focus	19	17	14	15	15	15	17	20	28	26	37%	30%	
Ambulatory focus	451	446	440	445	430	424	421	428	417	428	-5%	0%	

Appendix C.2: Number of Family Physicians per Winnipeg Population

Figure C.2: Number of Practicing FPs per 100,000 Population, 1991/92 - 2000/01

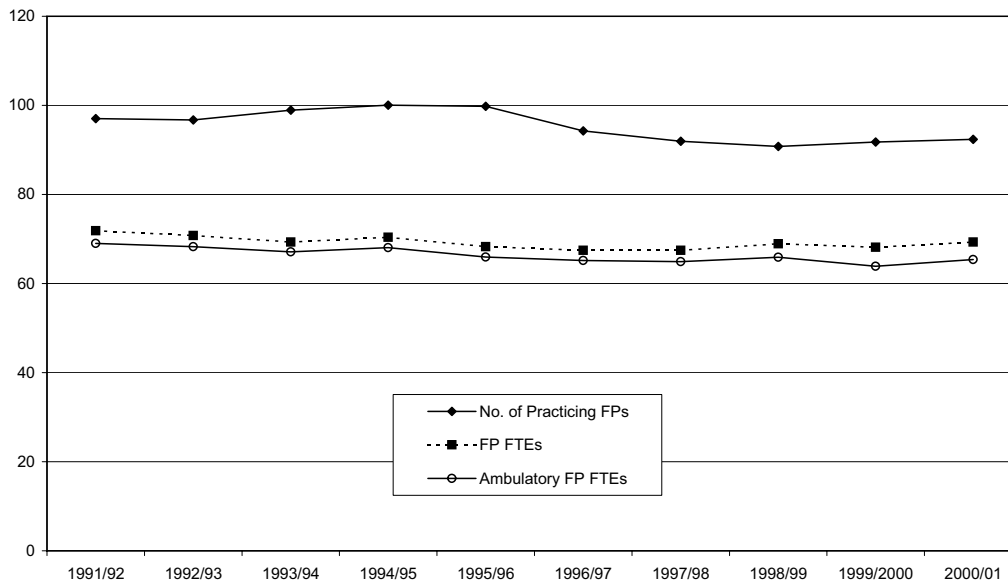


Table C.2a: Number of Winnipeg FPs and full-time equivalents per 100,000 population, by scope of practice, 1991/92 - 2000/01

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
											10 Years	3 Years
FP's per 100,000 population												
Non-ambulatory focus	10	9	7	7	8	7	8	8	9	8	-20%	0%
Ambulatory focus	87	88	92	93	92	87	84	83	83	84	-3%	1%
Total	97	97	99	100	100	94	92	91	92	92	-5%	1%
FTE's per 100,000 population												
Non-ambulatory focus	3	3	2	2	2	2	3	3	4	4	33%	33%
Ambulatory focus	69	68	67	68	66	65	64	66	64	65	-6%	-2%
Total	72	71	69	70	68	67	67	69	68	69	-4%	0%

Table C.2b: Average population served by one Winnipeg FP and full-time equivalents, 1991/92 - 2000/01

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
											10 Years	3 Years
Population per FP	1,031	1,034	1,011	1,000	1,002	1,061	1,088	1,102	1,090	1,083	5%	-2%
Population per FTE	1,391	1,413	1,443	1,421	1,465	1,483	1,483	1,451	1,467	1,443	4%	-1%

Appendix C.3: Characteristics of Family Physicians

Figure C.3: Number of Practicing Winnipeg FPs, by Age Category, 1991/92 - 2000/01

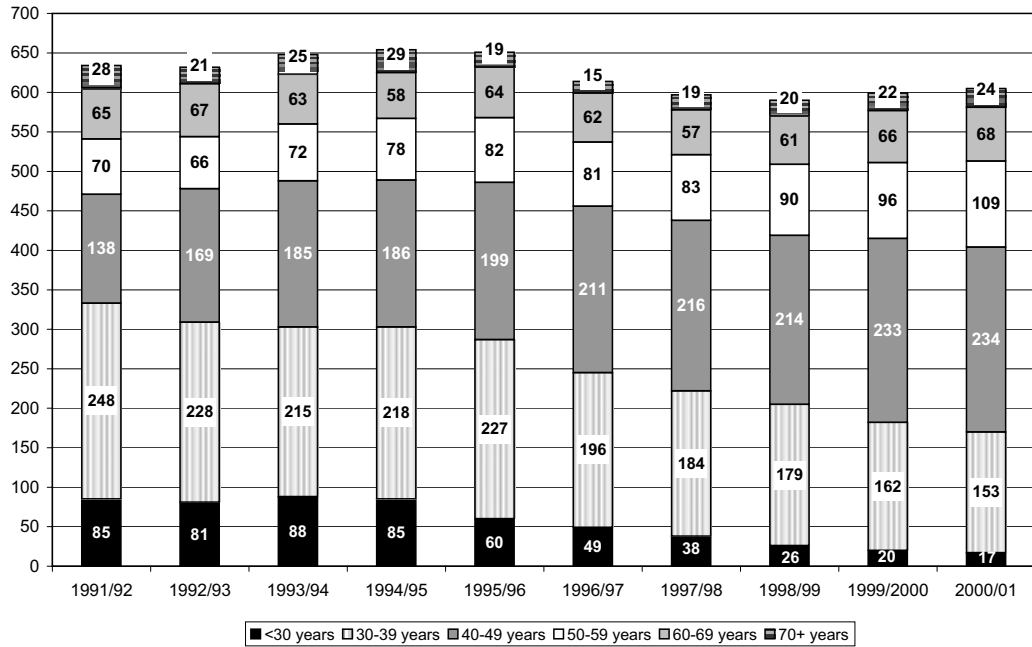


Table C.3: Characteristics of Winnipeg FPs, per annum, 1991/92 - 2000/01

FP Characteristics	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
											For All Available Years	3 Years
Average Age (Years)												
Males	44.4	44.0	44.3	44.5	44.7	45.4	45.8	46.4	47.3	47.8	8%	3%
Females	38.3	39.0	39.3	39.3	40.1	40.7	41.6	42.6	43.0	43.5	14%	2%
Total	42.6	42.6	42.8	42.9	43.2	43.9	44.4	45.2	45.9	46.4	9%	3%
Number of FP's per Age Structure												
<30 years	85	81	88	85	60	49	38	26	20	17	-80%	-35%
30-39 years	248	228	215	218	227	196	184	179	162	153	-38%	-15%
40-49 years	138	169	185	186	199	211	216	214	233	234	70%	9%
50-59 years	70	66	72	78	82	81	83	90	96	109	56%	21%
60-69 years	65	67	63	58	64	62	57	61	66	68	5%	11%
70+ years	28	21	25	29	19	15	19	20	22	24	-14%	20%
% of Females	29%	29%	31%	31%	32%	32%	32%	32%	32%	31%	7%	-3%
% Salary	N/A	N/A	5%	5%	4%	5%	5%	6%	7%	7%	40%	17%

Appendix C.4: Workload Measures for Winnipeg Family Physicians

Figure C.4: Mean Visits per Annum per Winnipeg FP, by Age, 1991/92 and 2000/01

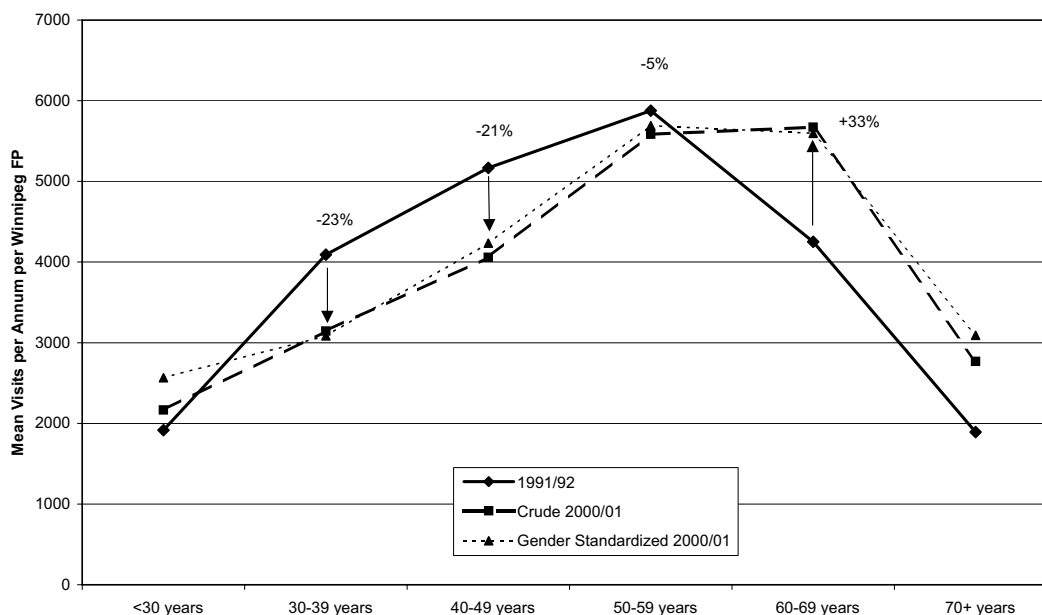


Table C.4a: Workload measures for Winnipeg FPs, by physician type, 1991/92 - 2000/01

											Per Cent Change	
	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	1991-2000	3 Years
All Winnipeg FPs												
Visits/Wednesday per FP*	27.9	27.5	27.1	27.6	27.1	27.2	27.4	28.1	27.6	27.8	0%	1%
Full-time Days/Annum	153	150	147	148	152	155	157	160	154	157	3%	-2%
Visits/Annum	4,198	4,170	3,932	4,015	3,949	4,139	4,227	4,441	4,163	4,193	0%	-6%
Different Patients/Annum	1,700	1,733	1,655	1,685	1,649	1,690	1,727	1,777	1,699	1,706	0%	-4%
FTE/FP	0.74	0.73	0.70	0.70	0.68	0.72	0.73	0.76	0.74	0.75	1%	-1%
Part-Time FPs												
Full-time Days/Annum per FP	83	85	85	82	90	91	96	96	93	99	19%	3%
Visits/Annum per FP	1,536	1,640	1,615	1,538	1,591	1,690	1,801	1,775	1,649	1,599	4%	-10%
Different Patients/Annum per FP	833	900	871	813	822	881	923	925	860	833	0%	-10%
FTE/FP	0.38	0.39	0.38	0.36	0.36	0.38	0.41	0.42	0.39	0.40	5%	-5%
Full-Time FPs (FTE = 1 or more)												
Visits/Annum per FP	7,103	7,064	7,063	7,092	7,048	7,029	7,239	7,410	7,154	7,189	1%	-3%
Different Patients/Annum per FP	2,804	2,843	2,832	2,886	2,886	2,769	2,845	2,850	2,771	2,804	0%	-2%
FTE/FP	1.20	1.19	1.17	1.18	1.16	1.16	1.18	1.19	1.19	1.19	-1%	0%
FPs Residing in Winnipeg Throughout the Time												
Full-time Days/Annum per FP	191	193	191	191	191	190	188	189	185	180	-6%	-5%
Visits/Annum per FP	5,764	5,750	5,574	5,625	5,459	5,413	5,369	5,454	5,261	5,048	-12%	-7%
Different Patients/Annum per FP	2,354	2,353	2,269	2,272	2,213	2,122	2,099	2,098	2,043	1,963	-17%	-6%
FTE/FP	1.02	1.01	1.00	0.99	0.96	0.96	0.96	0.95	0.94	0.92	-10%	-3%
FPs, in-patient sub-specialists												
FTE/FP	0.28	0.27	0.31	0.34	0.28	0.34	0.34	0.37	0.49	0.49	75%	32%
FPs, ambulatory focus FTE/FP												
FTE/FP	0.79	0.78	0.73	0.73	0.72	0.74	0.77	0.80	0.77	0.77	-3%	-4%

* Visits/Wednesday per FP is a calculation of total visits provided on a full-time day of work, where full-time was determined on the basis of \$200 or more in real dollar billings.

Table C.4b: Workload measures for Winnipeg FPs, by gender and by age, 1991/92 - 2000/01

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
											10 Years 1991-2000	3 Years 1998-2000
Female FPs,												
Mean Visits per Annum, by Age												
<30 years	* figures not included due to small size of FP population											
30-39 years	3,212	3,008	2,887	2,969	2,692	3,045	2,838	2,961	2,251	2,227	-31%	-25%
40-49 years	4,128	4,237	3,569	4,171	3,853	3,612	3,439	3,752	3,351	3,122	-24%	-17%
50-59 years	2,854	3,486	3,546	4,896	4,002	4,753	4,677	4,334	4,226	4,544	59%	5%
60-69 years	* figures not included due to small size of FP population											
70+ years	* figures not included due to small size of FP population											
Female FPs, FTE/FP, by Age												
<30 years	* figures not included due to small size of FP population											
30-39 years	0.64	0.61	0.57	0.58	0.55	0.60	0.58	0.64	0.54	0.55	-14%	-14%
40-49 years	0.79	0.79	0.67	0.76	0.69	0.66	0.63	0.69	0.68	0.67	-15%	-3%
50-59 years	0.67	0.70	0.75	0.85	0.70	0.81	0.82	0.74	0.80	0.87	30%	18%
60-69 years	* figures not included due to small size of FP population											
70+ years	* figures not included due to small size of FP population											
Male FPs, Mean Visits per Annum, by Age												
<30 years	1,810	2,127	1,883	1,539	2,191	2,497	2,927	2,160	1,740	3,044	68%	41%
30-39 years	4,686	4,538	4,148	3,910	3,420	3,312	3,263	3,662	3,734	3,623	-23%	-1%
40-49 years	5,534	4,902	4,872	5,386	5,277	5,574	5,708	5,467	4,843	4,645	-16%	-15%
50-59 years	6,579	6,232	5,862	5,998	5,786	5,741	6,123	6,050	6,009	5,964	-9%	-1%
60-69 years	4,153	4,599	4,442	4,850	4,651	4,808	4,533	5,626	5,419	5,813	40%	3%
70+ years	1,892	2,311	2,694	2,373	2,620	2,674	3,362	3,419	3,308	3,092	63%	-10%
Male FPs, FTE/FP, by Age												
<30 years	0.35	0.40	0.37	0.29	0.40	0.48	0.58	0.44	0.33	0.48	37%	9%
30-39 years	0.85	0.80	0.74	0.71	0.62	0.60	0.61	0.64	0.65	0.64	-25%	0%
40-49 years	1.01	0.92	0.89	0.93	0.90	0.94	0.96	0.92	0.86	0.84	-17%	-9%
50-59 years	1.10	1.04	1.00	1.01	0.98	0.95	1.03	1.00	1.00	0.98	-11%	-2%
60-69 years	0.79	0.85	0.83	0.87	0.82	0.84	0.79	0.92	0.87	0.92	16%	0%
70+ years	0.39	0.46	0.51	0.45	0.51	0.49	0.65	0.66	0.64	0.62	59%	-6%

Table C.4c: Workload measures for Winnipeg FPs, by age, 1991/92 and 2000/01

Age of FP, Mean Visits per Annum	1991/92	2000/01	Per Cent Change
			10 years 1991-2000
<30 years	1,917	2,167	13%
30-39 years	4,092	3,145	-23%
40-49 years	5,167	4,057	-21%
50-59 years	5,877	5,583	-5%
60-69 years	4,250	5,671	33%
70+ years	1,892	2,769	46%
Mean Visits per Annum for All FPs	5,195	5,491	6%
Age of FP, FTE/FP			
<30 years	0.37	0.40	8%
30-39 years	0.77	0.61	-21%
40-49 years	0.95	0.77	-19%
50-59 years	1.01	0.95	-6%
60-69 years	0.80	0.93	16%
70+ years	0.39	0.58	49%

Table C.4d: Workload measures for Winnipeg FPs, by age cohort and by residency, 1992/93 - 2000/01

Age of FPs in 1992/93-1994/95	Age of FPs in 1998/99-2000/01	Visits per Annum			Differences in Workloads 1992/93-2000/01 Within Age Cohort
		1992/93- 1994/95	1995/96- 1997/98	1998/99- 2000/01	
All Winnipeg FPs					
31-33 years*	37-39 years	3,890	3,570	4,425	14%
34-36 years	40-42 years	3,494	3,312	3,764	8%
37-39 years	43-45 years	4,383	3,877	4,283	-2%
40-42 years	46-48 years	4,600	4,409	4,271	-7%
43-45 years	49-51 years	5,087	5,478	5,235	3%
46-48 years	52-54 years	5,409	5,060	5,101	-6%
49-51 years	55-57 years	4,916	4,777	5,067	3%
52-54 years	58-60 years	6,016	5,072	5,780	-4%
55-57 years	61-63 years	5,290	5,391	6,653	26%
58-60 years	64-66 years	5,145	5,646	5,532	8%
61-63 years	67-69 years	5,430	4,087	4,653	-14%
64-66 years	70-72 years	3,561	3,934	2,546	-28%
FPs Residing in Winnipeg Throughout the Entire Period (1991/92 - 2000/01)					
31-33 years	37-39 years	5,595	5,395	4,991	-11%
34-36 years	40-42 years	4,702	4,494	4,253	-10%
37-39 years	43-45 years	4,738	4,523	4,567	-4%
40-42 years	46-48 years	5,247	5,137	4,666	-11%
43-45 years	49-51 years	5,951	5,884	5,790	-3%
46-48 years	52-54 years	5,930	5,846	5,899	-1%
49-51 years	55-57 years	5,479	5,729	5,491	0%
52-54 years	58-60 years	6,719	6,165	6,514	-3%
55-57 years	61-63 years	6,629	6,581	6,284	-5%
58-60 years	64-66 years	5,991	6,283	6,633	11%
61-63 years	67-69 years	6,317	5,058	5,199	-18%
64-66 years	70-72 years	4,578	3,873	2,204	-52%
FPs Residing in Winnipeg for a Portion(s) of the Period (1991/92 - 2000/01)					
31-33 years	37-39 years	2,299	2,409	3,959	72%
34-36 years	40-42 years	1,942	2,171	3,190	64%
37-39 years	43-45 years	3,472	3,016	3,819	10%
40-42 years	46-48 years	2,745	2,451	3,191	16%
43-45 years	49-51 years	2,492	3,855	3,616	45%
46-48 years	52-54 years	2,023	1,655	1,774	-12%
49-51 years	55-57 years	3,297	2,040	3,114	-6%
52-54 years	58-60 years	3,908	1,794	3,578	-8%
55-57 years	61-63 years	2,614	2,615	7,512	187%
58-60 years	64-66 years	3,281	4,478	3,802	16%
61-63 years	67-69 years	4,210	1,415	**	--
64-66 years	70-72 years	2,822	**	**	--

* Workload measures within each time period were calculated for only those physicians resident for the entire three years.

** Workload measures not provided due to a small number of physicians.

Appendix C.5: Migration Patterns of Winnipeg Family Physicians

Table C.5: Migration patterns of Winnipeg FPs per annum, 1991/92 - 2000/01

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Average	
											10 Year 1991-2000	3 Year 1998-2000
Immigrants*												
# of immigrants	51	50	64	33	19	25	27	29	26	25	35	27
FTE in Year After												
Arrival (Annualized)	24.6	29.4	25.1	14.0	8.8	16.5	14.0	23.4	21.5	12.9	19.0	19.3
Mean Age	31.4	32.9	34.8	33.2	35.7	38.6	35.8	37.5	37.5	36.0	35.3	37.0
% Female	35%	30%	34%	42%	37%	40%	26%	38%	31%	32%	--	--
FTE/Head	0.48	0.59	0.39	0.42	0.46	0.66	0.52	0.81	0.83	0.52	0.57	0.72
Emigrants**												
# of emigrants	36	31	35	35	41	27	27	22	29	23	31	25
FTE in Year Prior to												
Arrival (Annualized)	12.6	19.2	20.7	19.4	28.7	19.1	12.1	10.5	15.1	16.1	17.3	13.9
Mean Age	45.0	41.7	41.4	47.7	48.2	44.5	41.7	40.5	42.1	52.2	44.5	45.0
% Female	19%	26%	29%	26%	24%	37%	44%	36%	45%	22%	--	--
FTE/Head	0.35	0.62	0.59	0.55	0.70	0.71	0.45	0.48	0.52	0.70	0.57	0.60
Net Migration - FPs												
(Im - Em)	15	19	29	-2	-22	-2	0	7	-3	2	4	2
Net Migration - FTE												
(Im - Em)	12	10	4	-5	-20	-3	2	13	6	-3	2	5

Note: *Immigrant, in this context, means FP who started to provide services to Winnipeg residents.

**Emigrant, in this context, means that a FP stopped providing services to Winnipeg residents.

APPENDIX D: GLOSSARY OF TECHNICAL TERMS

Ambulatory Care Visit

An ambulatory physician visit is defined as any contact with a physician that occurs while the patient is not a hospital inpatient. Physician visits to residents of personal care homes are counted as ambulatory visits, as are physician services received in hospital emergency rooms and outpatient departments. Contacts with physicians in salaried positions are included when evaluation claims are submitted. All prenatal and postpartum care visits are excluded. For more information, see the Manitoba Centre for Health Policy website at: www.umanitoba.ca/centres/mchp/concept/dict/ambulatory.html

Concentration of Care Index - See Herfindahl Index

Diabetes

We identified adults, aged 20 to 79, as being diabetic if they had at least two physician visits or one hospital claim that contained a diabetic diagnosis (i.e., ICD-9-CM code of 250) in any field over a period of three years. This algorithm has been validated by others (Blanchard et al., 1996; Hux et al., 2002; Robinson et al., 1997). The identification of individuals with diabetes from administrative data is always done over a number of years. In this study, people identified as diabetic in 1992 must have had at least two physician visits or one hospital claim with a diabetic diagnosis during the period 1989/90 to 1992/93. To determine population treatment prevalence rates we used the average population of Winnipeggers age 20 to 79 in the period, as illustrated in Table D.1.

Table D.1: Winnipeg adult population prevalence of diabetes per 100 adults, 1992/93 - 2000/01

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/2001
Prevalence of Diabetes	3.52	3.65	3.77	3.86	3.99	4.17	4.37	4.63	4.93

Blanchard et al. (1996) estimated the Manitoba population treatment prevalence for all adults over the age of 25 to be 6.69 per cent in 1991. Our estimates are lower but two key differences in research methods are evident. Blanchard et al. estimate treatment prevalence among those over 25 and for residents of the entire province. We estimate for adults between 20 and 79 and for residents of the WRHA.

Hux and Tang (2002) estimate the prevalence of diabetes in Ontario to be 4.72 in 1995 and 6.19 in 1999, or a 31 per cent increase over this five-year period. Our estimates are lower in both periods, but increase 16 per cent over the same term. Hux and Tang estimated prevalence among those over

20 years and for residents of a province. Mokdad et al. (2000) estimated the prevalence of diabetes in the United States to be 5.4 per cent in 1992 and 6.5 per cent in 1998, or a 20 per cent increase over this seven-year period. Our estimates are lower in both terms, but increased 24 per cent over the same term.

Different Patients per Annum per FP

We counted for each FP in each fiscal year the number of different people who visited the practitioner.

Family Physician (FP) (see also Winnipeg Family Physician)

Throughout this report we use the term family physician to represent general and family practitioners.

Family Physicians with Non-Ambulatory Care Focus

Practitioners who focus their practice (i.e., 70% or more of billings) on serving hospital patients (e.g., surgical assistants or inpatients) and/or nursing home residents.

FTE/FP (i.e., full-time equivalents per FP)

This is a measure of average workload for a group, cohort or population of physicians that has been used in other jurisdictions. It can be interpreted in a 'colloquial' sense to mean the average number of FTEs a physician would work, as if all physicians worked exactly the same full time equivalents or workloads. We counted the sum of the full-time equivalents for all FPs in each fiscal year who billed Manitoba Health at least once and divided this by the number of these FPs.

Full-Scope Physician

Full-time Winnipeg FP who submits fee-for-service and/or evaluation claims, 30 per cent or more of the total dollar value of their billings are attributable to ambulatory care visits, and their Herfindahl index score is 0.1410 or less.

Full-Time

FPs whose FTE values are one or more.

Full-Time Days per Annum

We counted the number of days in each fiscal year that an FP billed \$200 or more in real dollar billings and divided this by the number of FPs that billed Manitoba Health in the corresponding period. The results remained unchanged when either real or price-adjusted billings were used.

Full-Time Equivalent (FTE)

To measure full-time equivalent for Winnipeg FPs we used the national algorithm developed by Health Canada, but modified the base year to be 1991/92. The base year used by Health Canada is 1994/95, but we found billing patterns in Winnipeg during that fiscal year to be atypical which may be attributable to the contract negotiation and arbitration process between Manitoba Health and physicians, as well as warnings of claw-backs, that occurred during that period.

The national algorithm assigns a single value to each Winnipeg FP to quantify their activity level relative to what was considered to be a 'benchmark full load'. This benchmark full load was calculated by: (1) price-adjusted billings (i.e., B) for each year to control for temporal changes in the fee schedule; (2) rank ordering FPs according to their total price-adjusted billings; (3) assigning one full-time equivalent to the average workload of Winnipeg FPs whose price-adjusted billings were between the 40th and 60th percentile; and (4) assigning each Winnipeg FP an FTE value based on the following formula:

$$\begin{aligned} \text{FTE} &= B/B40 && \text{if price-adjusted billings were below the 40th} \\ & && \text{percentile} \\ \text{FTE} &= 1 && \text{if price-adjusted billings were between the} \\ & && \text{40th and 60th percentile} \\ \text{FTE} &= \log (B/B60) && \text{if price-adjusted billings were above the 60th} \\ & && \text{percentile} \end{aligned}$$

The nature of the national algorithm used to calculate FTEs includes logarithm values and a reference year and, therefore, it does not enable one to intuitively understand the magnitude of temporal changes in FTE. Therefore, we used newly developed measures of workload to better understand temporal shifts in workloads from the perspective of physicians (Table D.2). The most common measures of supply (i.e., FTE) and workload (i.e., FTE per FP) rely on financial data for their calculation. While methodological procedures were undertaken to standardize prices across time, as noted above, we elected to develop measures of workload that did not rely on financial figures in order to validate the finding of workload stability across the period.

As illustrated in Table D.2, to attain a FTE calculation of one an average FP would provide 5,200 to 5,400 visits per annum in 1991/92 and 2000/01, respectively. This practitioner would also work, on average, approximately 205 full-time days and see 2,250 different patients per annum. This was true in 1991/92 and 2000/01. This finding of little change in the 'productive capacity' of an FP, assigned an FTE of one, supports the validity of the

FTE algorithm for measuring temporal change. Indeed, the fact that these measures of supply are highly correlated supports the criterion-related validity of each measure.

Table D.2: Workload measures for Winnipeg FPs with FTE of 1.0, 1991/92 - 2000/01

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	Per Cent Change	
											10 Years	3 Years
FTE=1												
Full-Time Days/ Annum per FP	206	205	205	203	206	215	213	211	208	203	-1%	-4%
Visits/Annum per FP	5,195	5,060	5,172	5,212	5,388	5,395	5,245	5,075	5,444	5,491	6%	8%
Different Patients/ Annum per FP	2,284	2,256	2,317	2,359	2,375	2,327	2,211	1,985	2,074	2,255	-1%	14%
FTE/FP	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0%	0%

Herfindahl Index

The Herfindahl index measures the degree of concentration or specialization of a practitioner, and has been used in the health services research literature to measure the degree of specialization among physicians (Baumgardner and Marder, 1991; Kazanjian et al., 2000) and in the antitrust literature to measure the degree of concentration in an industrial sector. Referred to in this report as the Concentration of Care Index. See Appendix E for more methodological details regarding this index.

Hypertension

Winnipeggers who have hypertension were defined as adults, age 25+ years, who had at least one physician visit over three fiscal years, and who had an ICD-9-CM code of 401 or 402. This method was validated by Robinson et al. (1997) against the Heart Health Survey. For more information on the definition of hypertension, see the Manitoba Centre for Health Policy website at www.umanitoba.ca/centres/mchp/concept/concept.frame.shtml. When identifying individuals with hypertension in any one year, we assigned individuals using a three-year window as having hypertension in the middle year. That is, to determine FP visit rates for individuals with hypertension in 1992/93 we used administrative data for the period 1991/92, 1992/93 and 1993/94.

To determine treatment prevalence rates we used the population size in 1992/93 in the denominator (Table D.3). Frohlich et al. (2001) estimated the treatment prevalence of hypertension in the WRHA in 1998/99 to be 200 using claims from all physicians. We use this same algorithm.

Table D.3: Winnipeg adult population prevalence of hypertension per 1,000 adults, 1992/93 - 2000/01

	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01
Prevalence of Hypertension	183	184	187	190	192	195	200	207	215

Income Quintiles

Income quintiles refer to the categorization of Winnipeggers into five equal groups on the basis of the median household income of the community in which they reside. The research methods used to calculate quintiles are summarized on the MCHP website at www.umanitoba.ca/centres/mchp/concept/concept.frame.shtml.

Limited-scope (or Focused-Scope) FPs

Full-time Winnipeg FP who submits fee-for-service and/or evaluation claims, 30 per cent or more of the total dollar value of their billings are attributable to ambulatory care visits, and their Herfindahl index score is higher than 0.1411.

Mental Health Condition

The population of Winnipeg adults over the age of 18 who were treated for mental health conditions were hierarchically classified as psychotic or non-psychotic using medical claims submitted by physicians and/or hospital discharge abstracts over a two-year period. Individuals were classified as psychotic if they had an ICD-9-CM diagnostic code of 295-299, which specifies mental health conditions such as schizophrenia, paranoid conditions and major depression. Individuals who were not psychotic were classified as non-psychotic if they had an ICD-9-CM diagnostic code of 300-301, 306-309 or 311, which specifies mental health conditions such as mild affective, neurotic and personality disorders. Winnipeg residents who received care during a two-year period (e.g., 1991/92 and 1992/93) were identified to measure their use of FP services during the second-year period (e.g., 1992/93). Therefore, data from the period 1991/92 to 2000/01 were used to calculate prevalence and use rates for 1992/93 to 2000/01.

The treatment prevalence of Winnipeg adult residents (i.e., 18 years of age) with non-psychotic mental disorders increased over the course of nine years (i.e., 156 per 1000 population in 1992/93 to 205 per 1000 population in 2000/01). Treatment prevalence of psychotic disorders also increased slightly (i.e., 29 to 32 per 1000 population).

Non-Psychotic Mental Health Condition - See Mental Health Condition.**Part-Time**

Any practicing Winnipeg FP whose FTE value is less than one.

Practicing FP

Any Winnipeg FP who bills the Medical Service Plan any amount in every fiscal year quarter.

Price-Adjusted Billings

The assignment of a standardized price to each tariff code for all fiscal years. Price adjusted billings were used to understand temporal changes in billings. Total billings during any time period are a function of the volume of services, the mix of tariff codes used by physicians, and prices for each of these codes. Across time, variability in total billings can also be attributed to changes in prices. Therefore, in order to understand temporal changes in the volume of service and the mix of tariff codes we standardized prices across time. The standard price assigned to each tariff code was determined using the most frequent tariff assigned to a code, and in circumstances where there was more than one mode tariff the first value was used.

Psychotic Mental Health Condition - see Mental Health Condition.**Standardized Rates**

The reference population used to standardize rates in this study was the population of people who resided in the WRHA in 1991/92. Standardized utilization rates adjust crude rates by accounting for the age and gender demographic changes in the population over the period. We used direct rates ~ the expected number of events per 1000 people if the study population had the same distribution of confounding groups (i.e., sex and age groups) as did the standard population.

Turnover Rate

The workforce turnover rate was calculated by adding the number of FPs new to Winnipeg plus the number of Winnipeg FPs who left each year divided by the number of FPs who billed Manitoba Health.

Visit

An ambulatory physician visit is defined as any contact with a physician that occurs while the patient is not a hospital inpatient. Physician visits to residents of personal care homes are counted as ambulatory visits, as are physi-

cian services received in hospital emergency rooms and outpatient departments. Contacts with physicians in salaried positions are included when evaluation claims are submitted. All prenatal and postpartum care visits are excluded. For more information, see the Manitoba Centre for Health Policy website at: www.umanitoba.ca/centres/mchp/concept/dict/ambulatory.html.

Visits per Annum per FP

We counted for each FP in each fiscal year the number of visits provided and averaged this number across FP.

Visits per Resident

We counted the number of visits made by people who resided in the WRHA and divided this by the number of residents in the region. Therefore, this is a measure of utilization for the entire population of people in communities in the WRHA.

Visits per Wednesday per FP

This measure was designed to estimate the number of visits provided on an average day worked full-time. To calculate this indicator of workload we first identified the subset of Wednesdays in which any FP billed \$200 or more in real dollar billings (i.e., full-time day of work). We then summed the total number of visits provided on these days divided by the number of these days. The values, and trends, were not substantively different when either real or price-adjusted billings were used.

Winnipeg Family Physician (FP)

A medical physician who has: (1) billing privileges with Manitoba Health, (2) registered as a family or general practitioner with Manitoba Health, (3) submitted fee-for-service or evaluation claims, and (4) provided care to patients who are most likely to reside within the geographic area that became the Winnipeg Regional Health Authority in 1999. In order to determine whether a family physician would be considered a Winnipeg physician, we identified the residential location of all discrete individuals for whom care was provided during one fiscal year. If the residential location most frequently cited was Winnipeg, the family physician was designated as a Winnipeg physician for that fiscal year. This process was repeated for each year for which data are reported. The results did not change when we repeated this analysis and identified Winnipeg physicians using the residential data on a month-by-month basis.

WRHA

Winnipeg Regional Health Authority.

APPENDIX E: SCOPE OF PRACTICE OF FAMILY PHYSICIANS - METHODOLOGY

Recent survey research suggests that there are a number of Winnipeg FPs who focus their practice in areas of special interest and do not provide the full range of ambulatory care services typically associated with FPs who might be called "family physicians" by Winnipeg residents (Kirk, 2001). Others have observed that FPs in other jurisdictions are increasingly not offering emergency services, obstetrical care, etc. (Chan, 2002b). To better understand temporal changes in the mix of different types of FPs, and the implication of any changes in mix on available supply of practitioners who are available to provide a full range of services to Winnipeggers, we developed an algorithm to classifying FPs as:

- FPs with non-ambulatory care focus - FPs who focus their practice on serving inpatients (e.g., hospitalists) and/or assisting in surgical procedures, or
- FPs with ambulatory care focus - FPs who focus their services on serving patients on an ambulatory care basis. We classified these practitioners into two mutually-exclusive groups:
 - Full-scope FPs - FPs who provide services directed at a wide array of diagnostic conditions, or
 - Focused-scope FPs - FPs who focus or restricted their practice to serving special populations (e.g., children, seniors, females) or specific diagnostic conditions (e.g., eye care).

FPs with Non-Ambulatory Care Focus

To determine which FPs practiced as inpatient subspecialists, we calculated the percentage of total billings (in dollars) for each practitioner that was attributable to ambulatory care visits. For the period 1999/2000, we constructed profiles for all FPs where 40 per cent or less of their total billings could be attributed to ambulatory care. These profiles identified the primary locations of service provision and the proportion of all encounters that were with inpatients. Analysis of these profiles revealed that FPs, who had 30 per cent or less of their total billings attributable to ambulatory care, primarily provided care to anaesthesia or surgical assistance to inpatients. Winnipeg FPs, who had 30 to 40 per cent of their total billings attributable to ambulatory care, provided care to inpatients but also had a sizable practice serving ambulatory care patients. Therefore, we elected to use 30 per cent or less of total billings attributable to ambulatory care as the cut point for determining which practitioners could be considered to focus their practice on non-ambulatory care. The selection of 30 per cent as a cut point resulted in 8.6 per cent of FPs being assigned to the 'non-ambulatory care' group in 2000/01 and 10.4 per cent in 1991/92. If a 40 per cent cut point had been

selected 11.5 per cent of FPs would be assigned to this group in 2000/01 and 11.2 per cent in 1991/92.

Full-Time FPs with Ambulatory Care Focus: Full-scope FPs and Focused-Scope FPs

'Full-scope FPs' and 'focused-scope FPs' were Winnipeg FPs whose billings attributable to ambulatory care visits were 30 per cent or more of total billings (in dollar values). The scope of practice of each full-time, ambulatory care FPs was assessed using a multi-step process. The first two steps involved: grouping the diagnostic codes from all claims submitted by each FP into clinically homogeneous clusters, and calculating a 'Concentration of Care Index' for each FP to measure the degree to which each physician concentrated (or not) their services to specific clinical areas. Next, we classified full-time FPs with ambulatory care focus into two groups according to whether they were full-scope or focused-scope. An algorithm for assignment of FPs into these groups was established with the assistance of a group of four FPs. We then undertook to validate the temporal stability and validity of the algorithm.

Determining Scope of Practice

We used the Johns Hopkins Expanded DIagNOsis Clusters (i.e., DINO-Clusters) grouper algorithm to assign ICD-9 codes into 27 clusters.¹⁴ For each FP we calculated the proportion of total services attributed to each diagnostic cluster and used the Herfindahl index (hereinafter called the Concentration of Care Index) to measure the degree of concentration or specialization across diagnostic clusters for each FP. The Herfindahl index equals the sum of the squared shares of each diagnostic category treated in the FPs practice (i.e., $\sum s_i^2$).

The Concentration of Care Index, for an FP who only provides services directed at one diagnostic cluster, equals one, as the squared share of a single cluster would be one. AN FP who provided services equally across all diagnostic clusters approaches zero. Therefore, the Concentration of Care Index takes its minimum possible value for a complete generalist and rises with the degree of specialization until it reaches its maximum possible value for a complete specialist. Within the body of this report and the remainder of this appendix, we refer to the Herfindahl Index as our Concentration of Care Index.

¹⁴ To develop the DINO-Clusters algorithm, a team of generalist and specialist physicians worked with a team of researchers from Johns Hopkins University. They used clinical judgement to assign approximately 9,400 ICD-9-CM diagnostic codes to 190 Expanded Diagnosis Clusters (EDC) which can be further collapsed into 27 distinct groups - called Major Expanded Diagnostic Clusters (MEDC). The Dino-Clusters taxonomy places greatest emphasis on conditions that most commonly occur in ambulatory settings. By grouping diagnostic codes into groups that have clinical homogeneity, EDCs remove differences in coding practices between practitioners. MEDCs can then be used to profile the range of clinical areas in which physicians practice.

Defining Full-Scope and Focused-Scope FPs

In order to describe the mix of FPs to policy-makers, health service administrators, practitioners and the public we elected to classify FPs into two mutually exclusive types of ambulatory care FPs. We defined: 'full-scope FPs' as full-time physicians who provided services directed at a wide array of diagnostic conditions and 'focused-scope FPs' as full-time physicians who restricted their practice or otherwise serve special populations or diagnostic conditions. As the Concentration of Care Index enabled us to order FPs along a continuum from broadest to narrowest in scope of practice, we needed to establish an arbitrary 'cut-point' below which physicians would be considered full-scope FPs and above which they would be considered focused-scope FPs. Therefore, the next step involved the use of four different FPs (hereinafter referred to as peer group members) to independently review profiles of a random sample of 50 FPs (hereinafter referred to as the development sample) to determine whether each of the peer groups members would classify each FP as a 'full-scope FP' or a 'focused-scope FP'. The level of agreement between peer group members in assigning FPs from the sample was high (i.e., Cohen's kappa of 0.60 to 0.90, $p < .001$).

A classification or 'assignment' algorithm was then developed using the 1999/2000 development sample by determining Concentration of Care Index cut-points that represented the margins between the two groups of FP as defined by our peer group members. FPs in the development sample were rank-ordered by their index score. All peer group members rated all FPs with an index score of less than 0.0960 as full-scope, and one of the peer group members assigned an FP who had an index score of .0970 as with focused-practice. But, all peer group members indicated that the two FPs with index scores of 0.098 and .1000 as full-scope. One peer group member rated the FP with an index score of 0.101 as an FP with focused-practice, but three other group members rated this FP as full-scope. Three peer group members agreed that an FP with an index score of 0.102 was an FP with focused-practice, but only one peer group member rated an FP with an index score of 0.104 as focused-practice. Interesting, the same peer group member (i.e., member number four) rated FPs with index scores of 0.097, 0.101, and 0.104 as focused-practice. Two peer group members agreed that an FP with an index score of 0.110 was focused-practice; four peer group members agreed that an FP with an index score of 0.115 was a focused-practice. Indeed, two or more peer group members agreed that every FP who had an index score larger than 0.1150 was focused in their practice. All peer group members agreed that all FPs with an index score greater than 0.141 had a focused-practice.

Clearly, there is no one single index value that represents clear 'boundaries' to distinguish members of the two groups. Therefore, we assessed the validi-

ty of the index by conducting sensitivity analysis of the 'boundaries' between groups using three assignment algorithms with group cut points at index scores of 0.110, 0.115 or 0.141. The sensitivity and positive predictive value (PPV) for all three algorithms was assessed in comparison to each of the four peer group members for 1999/2000. The algorithm that created a cut point at 0.141 had the highest sensitivity and PPV values. Sensitivity refers to the proportion of FPs who were full-scope (or focused-scope), as assessed by peer group members who were also assigned full-scope (or focused-scope) using the administrative data algorithm. Sensitivity in detecting a full-scope FP, using an algorithm with the 0.141 cut point averaged 0.91 (range: 0.89 to 0.91 for the four peer group members). Sensitivity in detecting a focused-scope FP with the 0.140 cut-point was 1.00. The PPV refers to the proportion of full-scope (or focused-scope) FPs as assigned by the algorithm that were confirmed to be true positives by the peer group member. PPV in detecting full-scope FP, using an algorithm with the 0.141 cut point, was 1.00. PPV in detecting focused-scope FPs averaged 0.50 (range: 0.37 to 0.50 for the four peer group members).

When this assignment algorithm (cut-point of 0.141) was assigned to the 1999/2000 population of full-time FPs who focused on ambulatory care, 20 per cent of these practitioners could be considered to be focused in their scope of practice. These proportions were similar in 1991/92 and 2000/01 due to the similarities in the distributions of Concentration of Care indices in these periods. The peer group rates assigned 50 FPs into the two categories, using a random sample drawn from the population of full-time FPs in 1991/92 and 2000/01 who focused their practice on ambulatory care. The proportions assigned to these two groups by peer group members were very similar to the proportions assigned using the algorithm.

The assignment algorithm (cut point of 0.141) was then applied to the population of full-time, ambulatory care rural FPs from the same year as the development sample (i.e., 1999/2000). Prospectively, we expected that the proportion of rural FPs classified as full-scope FPs would be much higher and that the proportion classified as focused-scope would be much lower than proportions of these practitioners in Winnipeg. In 1998/99, 95 per cent of rural FPs (n=144) were classified as full-scope and five per cent were classified as focused-scope. In 1991/92, 94 per cent of rural FPs were classified as full-scope FPs and six per cent were classified as focused-scope (n=181).

The assignment algorithm (cut point of 0.141) was then applied to the population of full-time, ambulatory care FPs from a small urban community (i.e., Brandon, Manitoba) that included full-time FPs who focus on providing ambulatory care. Prospectively, we expected that the proportion of FPs from this community classified as full-scope FPs would be much higher and

that the proportion classified as focused-scope would be much lower than proportions of these practitioners in Winnipeg. In 1991/92 (n=24) and 1999/2000 (n=24) 96 per cent of FPs from this community were classified as full-scope and four per cent were classified as focused-scope. Figure E1 (located on the last page of this chapter) was created by rank ordering the Concentration of Care scores for the population of full-time, ambulatory care FPs who focused their practice on ambulatory care in 1991/92 and 1999/2000 for Winnipeg, rural Manitoba, and Brandon. The distribution of scores are portrayed to illustrate the similarities in the distribution between years for all jurisdictions, and to demonstrate the differences between jurisdictions in the proportion of FPs who are full or focused in scope. Each plot on the graph represents one FP.

To assess temporal stability of the Dino-Clusters™ algorithm and the Herfindahl index scores, the distribution of Herfindahl index scores for all full-time, ambulatory care FPs using data from 1991/92, 1999/2000 and 2000/01 were compared. Prospectively, we expected similar distributions in 1999/2000 and 2000/01, as scope of practice was unlikely to change over the course of one year. As illustrated in Table E.1 both measures were stable across time, which suggests temporal stability in scope of practice across the population of Winnipeg FPs.

Table E.1: Descriptive profiles of the scope of practice of full-time Winnipeg FPs, 1991/92, 1999/00, 2000/01

	1991/92	1999/00	2000/01
Full-time ambulatory care FPs (#)	279	263	268
Full-time equivalents			
Mean	1.19	1.19	1.19
Range	1.0 - 2.86	1.0 - 2.22	1.0 - 2.31
Total	334	312	319
No. of MEDCs			
Mean	25.3	24.7	24.8
Median	26	26	26
Range	2 - 27	5 - 27	4 - 27
Coefficient of Variation			
Mean	1.37	1.34	1.33
Median	1.16	1.2	1.17
Range	0.77 - 3.71	0.77 - 4.02	0.81 - 4.09
Herfindahl Index			
Mean	0.1428	0.1453	0.1427
Median	0.09	0.09	0.09
Range	.0620 - .9970	.0640 - .8220	.0640 - .8370
Skewness	3.53	3.06	3.22

Note: MEDCs = Major Expanded Diagnostic Clusters™; * Proportion of FPs as defined using the assignment

Lastly, others conducted survey research in 2000 to determine the proportion of Winnipeg FPs who considered themselves to be practicing family medicine, or practicing in an area of special interest (Kirk, 2002). Therefore, we were able to compare and contrast the proportional distribution of FPs assigned as full- or focused-scope to the results of this other study. Considering the differences in research methodologies ~ the results of both

studies are strikingly similar. The survey research estimated that the FTE complement of Winnipeg FPs who do family medicine (our equivalent to a part- or full-time practitioner who was full-scope FPs) to be 324, while we calculate it to be roughly 342. They estimate that the proportion of FPs who are practicing in an area deemed to be 'special interest' to be 35 per cent of FPs, our estimate of this group (i.e., non-ambulatory care FPs, plus full-time focused-scope FPs, plus 20% of part-time FPs) to be roughly 30 per cent of FPs. This finding supports the criterion-related validity of this approach to measuring scope of practice among a population of FPs.

In summary, in order to understand temporal trends in scope of practice among FPs we developed methodology that has not been used before. This required us to measure the inter-rater reliability of this construct of interest, as well as develop a computer algorithm to assign FPs as full- or focused-scope practitioners in ways that had a high degree of sensitivity and specificity vis-à-vis our peer group evaluators. The algorithm underwent preliminary investigation as to its psychometric properties, and was found to have a reasonably acceptable level of sensitivity, specificity, temporal stability, and criterion-related validity.

Figure E.1: Scope of Practice of Full-Time, Ambulatory Care FPs, 1991/92 and 1999/2000

