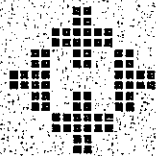


Population Health Information System
1991/ 92

Utilization of Physician Resources

Volume I: Key Findings

March 1994



**Manitoba Centre for
Health Policy and Evaluation**
Department of Community Health Sciences
Faculty of Medicine, University of Manitoba

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Acknowledgements

The order of authorship accurately reflects the long hours devoted to the project by the senior author. However, the second author undertook the initial drafting of the report and accepts responsibility for the emphases given. The results and conclusions are those of the authors and no official endorsement by Manitoba is intended or should be inferred.

The authors would like to acknowledge the efforts and support of the many individuals who contributed their time, expertise, and comments at various stages of this undertaking. We do however take full responsibility for any errors or omissions that may have crept in during any one of the many reanalyses and revisions. Both Fred Toll, retired from the Manitoba Health Services Commission, and Patrick Nicol, senior Systems Consultant at the MCHPE, provided illuminating facts and insight about the intricacies of the physician claims data. We would also like to thank the people at Manitoba Health, including Doug Hardy and K.J. Collier, M.D., who provided us with information and clarification on many issues as they arose. With regards to MCHPE staff, Charles Burchill gave considerable programming support. Bogdan Bogdanovic provided the figures for regional physician supply. Dave Friesen demonstrated extraordinary patience and competence in creating and revising the graphs and tables found in this module. Trish Franklin, Eileen Pyke, and Kim Bezaire provided much appreciated additional support in designing the tables, graphs, and text. Our appreciation and apologies to those who contributed to this work but through our error, are not listed here.

Many individuals provided feedback on draft versions of the document: K.J. Collier, M.D., Neil Donen, M.D., John Guilfoyle, M.D., Betty Havens, Vern Hicks, Al Holtslag, Shauna Hudson, Denise Koss, Brian Postl, Marg Redston, Denis Roch, Pete Sarsfield, M.D., Carolyn Sehon, Evelyn Shapiro, Bill Tholl, and Marilyn Yakabowich all contributed helpful perspectives.

Input from other members of the Centre's Population Health Information System Group was a valuable continuing resource. The Population Health Information Group is headed by Noralou Roos, Ph.D. and includes, in alphabetical order: Charlyn Black, M.D., Sc.D., Bogdan Bogdanovic, B.Comm., B.A., Charles A. Burchill, B.Sc., M.Sc., K.C. Carriere, Ph.D., Marsha Cohen, M.D., M.H.Sc., F.R.C.P.C., Carolyn DeCoster R.N., M.B.A., Norm Frohlich, Ph.D., Leonard MacWilliam, M.Sc., M.N.R.M., Cam Mustard, Sc.D., Doug Tataryn, Ph.D., and Fred Toll.

The Manitoba Centre for Health Policy and Evaluation

The Manitoba Centre for Health Policy and Evaluation (MCHPE) is a unit within the Department of Community Health Sciences, Faculty of Medicine, University of Manitoba. The Centre was created by a three year grant from the Health Services Development Fund. The MCHPE is active in health services research, evaluation and policy analysis, utilizing the Manitoba health data base to describe and explain patterns of care and profiles of health and illness.

Manitoba has one of the most complete, well-organized and useful health data bases in North America. The data base provides a comprehensive, longitudinal, population-based administrative record of health care use in the province.

Members of the MCHPE consult extensively with government officials, health care administrators, and clinicians to develop a research agenda that is topical and relevant. This strength, along with its rigorous academic standards and its exceptional data base, uniquely position the MCHPE to contribute to improvements in the health policy process.

The Centre's researchers are widely published and internationally known. They collaborate with a number of highly respected scientists from Canada, the United States and Europe.

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Executive Summary

The physician module of the Population Health Information System examines three major themes: access to physicians, overall patterns of visits to physicians, and expenditures on physician visits. Separate analyses are presented for consultative and non-consultative care, physician specialties, in and out of region contacts, and for residents grouped according to yearly visit intensity.

Several different perspectives are presented. First, an overview of physician utilization is presented for Manitoba. It examines factors such as the supply of specialist physicians, use by the age and sex of patients, and type of care received. Secondly, patterns of physician services received by Winnipeg residents are compared and contrasted with patterns of care received by individuals who reside in other areas of the province (non-Winnipeg). Finally, the analyses focus on comparing and contrasting patterns of care received by residents of the different Manitoba Health regions, with Winnipeg defined as a single region.

Unlike analyses that focus on physician practise patterns, the major focus of this module of the Population Health Information System is on describing the pattern of ambulatory care received by the population of a defined area, whether the care is received in or out of the region of residence. For example, care received in Brandon by a resident of Parklands will be counted in Parklands residents' utilization rates. Although the presented analyses raise many questions regarding regional differences in utilization, we make little attempt in this report to answer them: we simply seek to accurately describe what is.

Use of Physician Resources in Manitoba

As judged by data from 1991-92, general and family practitioners constitute the largest subgroup of Manitoba's physicians (57%), provide most of the visits to Manitobans (75%), and receive the bulk of provincial expenditures on ambulatory physician visits (63%).

Manitobans have remarkably good access to physician care with 84% of the population having at least one contact a year and 94% of the population having contact over a two-year period. A majority of Manitoba residents (62%) make between 1 and 7 visits to a physician during a year. These visits account for almost 40% of the province's expenditures on physician visits.

A small proportion of the population (6%) makes 15 or more visits a year and account for almost 30% of the expenditures.

Elderly Manitobans (those aged 75 years and older) average almost twice as many visits to physicians during the year as do younger Manitobans (those aged 15-64). However, because of their small numbers, the elderly account for only 10% of the province's expenditures on physician visits, compared with 61% spent on those aged 15-64.

Winnipeg to Non-Winnipeg Comparison

Winnipeg has approximately twice as many physicians per capita as do non-Winnipeg regions. Despite the marked differences in supply, fully 81% of non-Winnipeg residents contact a physician once during the year as compared with 85% of Winnipeg residents. Winnipeg residents, on average, make more contacts every year with physicians (their visit rate is 16% higher) and, because these visits are more likely to be to specialists, the province spends 26% more per capita in providing physician care to Winnipeg residents than it spends in providing such care to rural residents. The relatively small difference in the physician contact rate, given the major differences in physician supply, occurs because many rural residents receive care outside their region of residence: 21% of non-Winnipeg residents' visits occur in Winnipeg, and 7% occur in another region outside their home area.

Although less than half of Winnipeg's physicians (47%) are general and family practitioners, almost all of physicians practising outside Winnipeg (87%) are general and family practitioners. Winnipeg residents' higher use of physicians is associated with higher rates of contact with paediatricians, medical specialists and psychiatrists. Given Winnipeg residents' lower use of general and family practitioners (31 fewer visits per 100 residents), it appears that there is substitution between care provided by these specialists (paediatricians, etc.) and care provided by general practitioners in rural areas. For example, Winnipeg children (aged 0-14) have 3.2 times as many contacts with paediatricians compared to non-Winnipeg children, for whom general practitioners provide most paediatric care.

On average the province spends \$25 more per person providing physician services to Winnipeg residents than it spends on non-Winnipeg residents. In comparison with non-Winnipeg residents, the province spends \$34 more for care delivered by specialists and \$9

less for care delivered by general and family practitioners to Winnipeg residents. Visits to medical specialists, paediatricians and psychiatrists account for the bulk of this differential. In particular, an additional \$12 per resident is spent on the Winnipeg population for care delivered by psychiatrists, with such care accounting for almost half of the difference in per capita expenditures between the two areas. From the patient perspective, most of the \$25 difference is associated with higher expenditures for the high usage group: fully \$14 more per capita is spent on those making 15 or more visits a year.

Regional Comparisons

Despite very large differences in physician supply across the regions, a very high proportion of Manitobans in each of the eight Manitoba Health regions are seen by a physician at least once over the course of the year, ranging from 78% of Thompson residents to 85% of Winnipeg residents. Residents of Winnipeg and Norman regions have the highest physician contact rates, making 529 and 519 visits per 100 residents respectively. Residents of Westman, Interlake and Thompson have intermediate levels of contact, while residents of the Parklands, Eastman and Central regions have the lowest rate of physician contact.

Expenditure patterns across the regions correspond closely to visit patterns, except for Winnipeg residents, where expenditures are much higher than would be expected by visit pattern alone. For example, while Norman residents and Winnipeg residents visit physicians at similar rates, the province spends almost \$15 more per Winnipeg resident for such visits, related to a higher use of consults and visits to specialists instead of general practitioners.

Analysis of regional scores on indicators of need and health status in relation to rates of use of ambulatory physician services suggest that there is little relationship between measures of need and regional use of physician services. While residents of Thompson and Norman have the highest indications of need, Norman residents have relatively high rates of physician visits while Thompson residents have intermediate rates. In contrast, residents of Central and Winnipeg regions are assessed as having similar health status and need, but Central residents have the lowest visit rates and Winnipeg residents the highest. The absence of a relationship between indicators of need and aggregate measures of ambulatory care utilization differs from the patterns of hospital care where a relationship between measured need and utilization exists (Black, Roos, and Burchill, 1994).

The Population Health Information System is designed to describe patterns of physician service use and expenditures by Manitoba residents, and is not intended to explain the different patterns. The patterns described here raise many questions that require further study. Premature conclusions should not be drawn.

Specifically, these data raise legitimate questions about the appropriate allocation of physician resources in a small province. What is an appropriate level and mix of physician supply? How are patterns of use of physician services related to use of hospital care? What are the relative benefits of the different physician use characterizing Winnipeg and non-Winnipeg residents? Are there benefits from the care provided to Winnipeg residents by a rich supply of physicians and specialists? Winnipeg residents spend less time in hospital for acute illness than do residents of other regions - do paediatricians, psychiatrists and medical specialists deliver a more intensive service which substitutes for or curtails hospital admissions, or are simply fewer beds available in Winnipeg and therefore the system adapts independently of physician supply? Who are the individuals that incur 15 or more visits a year? What is the nature of their medical conditions and their care? What kind of benefits are accrued by this high intensity of use? Nothing in this report suggests these intensive usage patterns are inappropriate. Some of this usage will be to frail elderly patients in nursing homes, some as psychotherapy, but because such a small group accounts for such a high proportion of expenditures, further analysis will be useful. Clearly, the report raises important questions that have implications for planning future physician and hospital resources. Further research will be required to address such issues.

UTILIZATION OF PHYSICIAN RESOURCES

VOLUME I: KEY FINDINGS

Introduction

Population Health Information System

In January, 1991, the Manitoba Centre for Health Policy and Evaluation (MCHPE) was established at the University of Manitoba to provide Manitoba Health with research-based analyses, evaluation and policy options. The researchers agreed to undertake several specific projects each year as well as to develop a health information system for the province.

The Population Health Information System is designed to focus on the link between health care utilization and health, to make it possible to examine how effectively and efficiently a health care system produces (or fails to produce) health across various regions of the province. We have attempted to develop an information system that supports rational decision-making and that ultimately shifts discussions from a focus on the demand for health care to a demand for health. The system is population based, designed to track the health status and health care use of residents of given regions regardless of where such use takes place, an approach that is distinct from examining patterns of care delivered by specific providers or facilities.

The physician module is one of several different modules being created as part of the Population Health Information System, each of which is at a different stage of development:

Population Health: Health Status Indicators - Released January 1994

Socioeconomic Status and Health - Released January 1994

Utilization of Personal Care Home Resources - Released October 1993

Utilization of Hospital Resources - Released January 1994

Utilization of Physician Resources - Current document

Separate reports are produced for each of the modules. Most reports are presented in two volumes: Volume I presents key findings and Volume II contains a more detailed set of tables. The first reports of the Population Health Information System will have limited distribution, primarily to obtain comment and feedback. Subsequent versions of the system will include several years of data to permit analysis over time and will be distributed to a wider audience.

Methods

Analytic Approach

Unlike analyses that focus on physician practice patterns, the major focus of this module of the Population Health Information System is on describing the pattern of ambulatory care received by the population of a defined area, whether the care is received in or out of the region of residence. For example, care received in Brandon by a resident of Parklands will be counted in Parklands residents' utilization rates. Although the presented analyses raise many questions regarding regional differences in utilization, we make little attempt in this report to answer them: we simply seek to accurately describe what is.

Since data are presented without information about tests of significance or confidence intervals, caution must be used in interpreting results¹. However, parallel analyses conducted on the 1990/91 data produce similar patterns, lending credibility to the findings.

The report analyzes physician claims submitted to Manitoba Health for the fiscal year 1991/92 by physicians (both in and out of province) who provided physician services to Manitoba residents. Data analyzed by the MCHPE are comparable to that compiled annually by Manitoba Health in the Manitoba Health Annual reports. Our numbers differ slightly due to different definitions of Manitoba residency² and because our analyses are based on date of service, not date of payment. In addition, analyses were limited to physician services delivered to ambulatory patients, thus excluding contacts for hospitalized individuals. As in Manitoba Health reports, some physician services (e.g., dental work) are excluded. This report is based on 6,296,986 physician claims generated by ambulatory physician contacts by a population of 1,140,406 Manitoba residents.

¹ From a statistical perspective, because the findings are based on the analyses of information from all people in the population (instead of a sample, which represents information from only part of the population), they are not subject to sampling variability (Satin and Shasty, 1986). It has been suggested that caution must be taken when generalizing to another time period, since any event is subject to random variation, particularly when the probability of the event is small and the population subject to that event is also small (National Center for Health Statistics, 1993). Neither of these cautions applies here and analyses of subsequent years data supports the findings reported here.

² See section "Manitoba Population".

Residents of Manitoba were identified and information about their current region of residence was obtained from the Manitoba Health registry file as of December 31, 1991, except in the case of Status Indians³. Residence information on the registry file may not be reliable for Status Indians because Manitoba Health assigns the region of residence as the First Nation of Origin, usually a municipality denoted as an Indian Reserve. For these residents, postal code information taken from the individual's first physician claim contact was used to assign region of residence.

The numerator for rates was calculated by counting or summarizing events (i.e., physician visits) over the 1991-92 fiscal year for individuals identified as residents of a specified region. Denominators were based on counts of individuals resident in specified regions as per registry information on December 31, 1991. Rates for the number of persons using physician services, the numbers of visits, and for expenditures were developed by dividing numerator information by population denominators. The average visit rate was calculated by dividing the total number of physician visits for residents of a given region for the fiscal year by the total number of people using physician services during the same period.

In addition to crude rates, age- and sex-adjusted rates of indicators were developed to permit comparisons across regions. The age and sex structure of the population, together with differing needs for care, are factors recognized as contributing to different regional requirements for physician services; and accordingly are factors that ultimately influence patterns of care delivered. Eleven categories were used for age-standardization: 0-14, 15-24, 25-34, ...65-74, 75-79, 80-84, 85-89, and 90 and older. Unless otherwise specified, rates presented in Volumes I and II of this report have been age- and sex- adjusted using Manitoba population proportions and a direct method of standardization. These mathematically adjusted rates provide an indication of the use of care in one region relative to use in another, after the effects of differing population structures have been removed.

³ The designation "Status Indians", also referred to as "Treaty Indians", refers to a specific group of the aboriginal population that has certain rights and privileges under the Indian Act of Canada. Not all Status Indians may have chosen to register their status with the Manitoba Health registry.

Conceptual Issues

Manitoba Population

Almost all residents of Manitoba are covered by the Manitoba Health Services Insurance Plan⁴. New Manitobans arriving from another province are eligible for coverage after a waiting period of up to three months, while new Manitobans arriving from another country are eligible for coverage immediately if they have landed immigrant status. Foreign citizens holding a one-year or more work permit are also covered by Manitoba Health. Manitoba residents not covered include armed forces and RCMP personnel and federal penitentiary inmates. Population counts are based on the Manitoba Health registry as of December 31 of the fiscal year being processed⁵.

Time Period Covered

Tables in this report are based on medical services received during the fiscal year beginning April 1, 1991, through to March 31, 1992.

Total Dollar Value of Services Summarized

Our analyses indicate that Manitoba Health paid \$124.5 million in fee for service ambulatory care, and another \$3.8 million in services was documented through evaluation claims (largely filed by rural salaried physicians). We know we are missing the equivalent of \$2.9 million in ambulatory contacts with salaried emergency room outpatient department physicians at Winnipeg non-teaching hospitals (Manitoba Health, personal communication, November, 1993). Ambulatory physician care delivered through many federally and provincially funded institutions, such as the Manitoba Cancer Treatment Foundation is not documented in the Manitoba Health administrative claims system. We estimate however, that between 90 and 98% of all ambulatory care is documented through the claims system and reported on in this module. As well, most of the ambulatory care not captured in the system is delivered by Winnipeg physicians so any biases will be towards under-representing physician contacts by Winnipeg residents.

⁴ Manitoba residents are covered for medical services received while temporarily out of the province, e.g., during vacations or business trips. Fees paid for such services are based on the standard fee schedule, in Canadian funds. Expenditures for out of province claims are attributed to the home region of the patient.

⁵ The minor differences in population figures reported in this module and the Manitoba Health Annual Report (1991-92) are due partly to different definitions of what constitutes a resident of Manitoba, ours being the 'potential patient population' that existed during the time period indicated.

Region of Residence

Analyses are oriented to describing differing patterns of physician utilization by residents of the eight regions defined by Manitoba Health: Central, Eastman, Interlake, Norman, Parklands, Thompson, Westman, and Winnipeg (See Figure 1). While we recognize the diverse nature of Winnipeg residents (for example, in terms of ethnicity and socioeconomic status), we are for the present purposes of comparison to other Manitoba regions, analyzing it as a single region. For ease of reference, the non-Winnipeg regions are sometimes referred to in aggregate as a rural region in comparisons with Winnipeg.

Calculation of Age

Age was calculated as of December 31 of the fiscal year being analyzed, according to the birth year reported on the first claim of the fiscal year for an individual. Because the physician claims dataset produced by Manitoba Health does not include the century of birth, approximately 350 individuals (Manitoba Health Population report, 1992) who were 99 years of age or older were misclassified as being 100 years less than their actual age. This results in a very slight over-estimation of access by children and a slight under-estimation of access by the elderly.

Definition of Ambulatory Visits

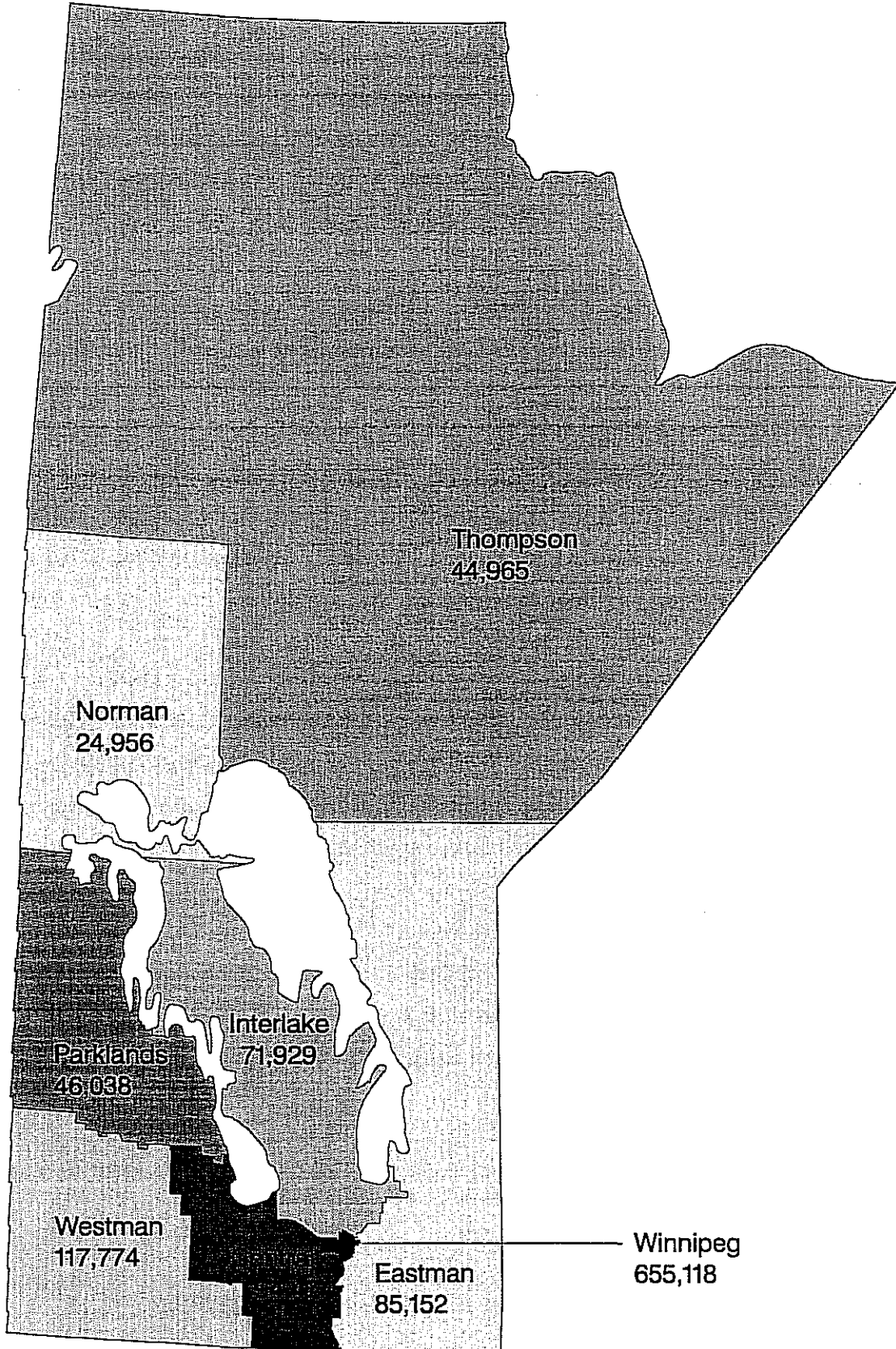
An ambulatory physician visit is defined as any contact with a physician⁶ which occurs while the patient is not a hospital in-patient. Physician visits to residents of personal care homes are counted as ambulatory visits, as are physician services received in hospital emergency rooms⁷ and out-patient departments. Unless otherwise specified, ambulatory visits include consultative and non-consultative care.

Ambulatory care delivered as part of a global tariff, such as for the six-week post-operative care period, examinations associated with other procedures (e.g., 2564 - injections of chemotherapeutic agents), and for prenatal and post-partum care visits claimed at the time of

⁶ All claims for oral surgery, dental, and periodontal contacts have been excluded from analyses. Services provided by chiropractors and optometrists are also excluded.

⁷ Emergency room visits are under-counted, particularly in Winnipeg, because all hospitals in Winnipeg except the Health Sciences Centre and St. Boniface hospital employ salaried emergency room physicians. Only four hospitals in rural Manitoba employ salaried emergency room physicians.

Figure 1. Manitoba Health Regions and Populations
December, 1991



delivery (4801, 4821, 4823) are not included in this report. We estimate that global billing for prenatal care constitutes just over 2% of all ambulatory visits, 35% of all visits to obstetrics and gynaecology specialists, and affects estimates of Winnipeg and non-Winnipeg utilization equally. Prenatal care has been the focus of a separate Centre report and access was found to be good even among Winnipeg women of lower socioeconomic status, particularly when compared to access rates elsewhere in North America (Mustard, 1993). On average, Winnipeg women were found to make an average of 10.5 visits and 87% of the physicians billed for their visits under a global fee. We have inadvertently included the prenatal visits of those patients whose physician billed fee for service. Such visits constitute less than 1% of all ambulatory visits and on a per capita basis, are used slightly more often in non-Winnipeg regions. Subsequent versions of this report will exclude all prenatal visits or report them all in a separate section.

Special call claims⁸ are always filed in addition to the regular ambulatory visit claim, and hence are not counted as an additional visit, but are included in the total cost of the visit. Ambulatory visits are different from physician services, in that a single ambulatory visit may generate other services such as for lab and X-ray work. These additional services however, are not counted as ambulatory visits, nor are they included in the visit cost.

Types of Rates Calculated

Number of Persons Making Contact with a Physician indicates the number of residents who had at least one ambulatory contact with a physician during the fiscal year analyzed (i.e., an individual who has had one or more physician visits is counted once, regardless of the number of visits). This measure provides a useful indicator of the ability of people in one region or another to access ambulatory physician services. For ease of reference, people making one or more ambulatory contacts are sometimes referred to in this report as "users".

Visits Per Patient is the average number of ambulatory visits made by people who made at least one visit throughout the year. This indicator is used to group people into the three levels of visit intensity.

⁸ Special call claims are generated when the physician is required to make a special trip, over and above the physician's regular routine, to attend to a patient, such as to the patient's residence or to an emergency or outpatient department of a hospital.

Number of Visits Per 100 Residents serves as a measure of total ambulatory utilization for a given region regardless of where such use took place. It is defined as the total number⁹ of visits made by residents of a region, divided by the total number of people in that region, multiplied by 100.

Expenditures Per Visit is the average fee paid by Manitoba Health for the ambulatory services rendered to residents of a given region. It represents only the physician fee for the visit, and does not include fees paid for any ancillary services associated with the visit, such as for laboratory or technical (e.g., X-ray) services. The expenditure per visit is influenced by the type of visit (e.g., primary care vs consultative care), place of visit¹⁰, as well as differences in the residents' use of medical and surgical specialists. For example, in 1990, a complete history and examination by a general practitioner (tariff 8540) cost the province \$31.15, while a history and physical exam done by an internist cost \$47.80; and a consultation (tariff 8550) by an internist, \$81.75.

Expenditures per Resident is the average amount spent for ambulatory physician visits by Manitoba Health for residents of a given region. It is influenced by the number of visits per resident and the expenditures per visit.

The Concept of Access

Regular contact with a physician ensures that a patient takes the first step towards obtaining any potential benefits from preventative, diagnostic and treatment services that the physician has to offer. Access is operationally defined as the proportion of people who make at least one ambulatory physician visit throughout the year.

⁹ Each claim submitted to Manitoba Health contains a value indicating the number of services which the claim represents. These values were used to calculate the total number of ambulatory visits, with the exception of the following claim tariffs: Tariffs 8571, 8580, 8581, 8583, 8584, and 8589 represent the number of 15 minute units spent with the patient, either for psychotherapy, or for pain therapy in a pain clinic. For these claims, the number of services was set to one per claim. Tariffs 8565, 8573, and 8574 are for detention with the critically ill, including cardiovascular resuscitation. These claims are for additional services beyond the initial half hour, and thus represent claims for a services already counted. The number of services was set to zero for these tariffs. Claims generated by newborn infants are not included in the visit count.

¹⁰ All costs reported include the additional fee premium paid by Manitoba Health, based on the primary residence of the claiming physician. The premium is 2.5% for Brandon physicians, 5% for rural physicians, and 10% for Northern (north of the 53 parallel) physicians.

Indicators of Need for Health Care

While age- and sex-adjustment removes the effects of population structure, it does not entirely adjust for need for health care. Adjusted rates of physician utilization must therefore be considered in the light of relative 'need' for medical care across regions. Two indicators of need are presented in this report. The first is the mortality rate for ages 0 to 64 years, adjusted to the provincial population and indexed to the provincial rate, and referred to in this report as the 0-64 Year Standardized Mortality Ratio (SMR). This is seen by many as the best single indicator of health status reflecting the need for health care (Birch and Eyles, 1991; Carstairs and Morris, 1989). It has been proposed for use in Ontario as an index of need for regional based health services (Eyles et al, 1993). It builds on the British tradition of using mortality rates for regional funding and allocation formulae. While using death rates to determine need for hospital care seems counter-intuitive, the 0-64 mortality ratio is strongly associated with indicators of morbidity and socioeconomic status. Furthermore a large proportion of hospital and physician care is used in the period just prior to death.

The second indicator is the Socioeconomic Risk index developed by the Socioeconomic Status and Health module of the Population Health Information System (Frohlich and Mustard, 1993). Socioeconomic status has been shown in Canada and elsewhere to be strongly related to poor health and to higher rates of use of hospital care (Carstairs and Morris, 1991, MacMahon et al, 1992). The socioeconomic risk index is comprised of six indicators derived from census data¹¹.

Characteristics of Use, Users, and Providers

Rates of access to physicians, visits per 100 residents, and expenditures per resident were examined in several ways to enhance the description of the way physician resources were used across regions. A description of these concepts and categories is outlined below.

¹¹ The six indicators are: 1) percentage of the population between the ages of 25 and 34 having graduated from high school; 2) percentage of the labour force between 15 and 24 years of age that is unemployed; 3) percentage of the labour force between 45 and 54 years of age that is unemployed; 4) percentage of single parent female households; 5) percentage of female labour force participation; and 6) average dwelling value.

Physician Supply

The supply of physicians for each region is the number of physicians who grossed \$40,000¹² or more in 1991-92. Earnings were based on submitted claims and include some salaried and all fee-for-service physicians¹³. Supply estimates do not include technical specialists, such as radiologists and anaesthetists, since these physicians are not involved in the primary management of patient care. It also does not include residents and interns practising in the Winnipeg teaching hospitals, who submit claims under their supervisor's billing number.

Physician Specialties

Physicians are classified by seven main groupings: general practice¹⁴, psychiatry, paediatrics, obstetrics and gynaecology, medical specialists, general surgeons and surgical specialists. Ambulatory visits to technical specialists, including anaesthesiology, radiology, and pathology have been included in the medical specialty category, but the number of such visits is extremely small.

Types of Care

Consultative care includes ambulatory visits in which the patient is referred by one physician seeking the opinion of another physician because of the "complexity, obscurity, or seriousness" of a patient's illness; or because a second opinion is requested either by the patient or another person acting on the patient's behalf. After the consultation, the patient is usually returned to the care of the referring physician. Consultation visits are usually provided by specialist physicians, but may occasionally be provided by general practitioners.

¹² The \$40,000 threshold was chosen for two reasons; 1) total Manitoba supply estimates could be verified against figures published by Manitoba Health, and 2) it is a calculationally simple algorithm which allows for an easy assessment of relative differences in regional physician supply.

¹³ Our figures differ from Table 12a of the 1991-92 Manitoba Health Annual report for three reasons: Manitoba Health; 1) includes salaried physicians who gross over \$40,000 if the physician submits at least one dollar in fee-for-service claims; 2) only counts physicians who were still registered on March 31 of the fiscal year; and 3) bases their reports on payment date, not service date.

¹⁴ While the Manitoba College of Physicians and Surgeons recognize Family Practice as a certifiable specialty, the physician claims data does not yet code this distinction. Thus for ease of reference, the term general practitioners will be used throughout this report to refer to both general and family practitioners.

Non-consultative care refers to all other ambulatory visits. It includes complete or regional histories and examinations and subsequent visits in which the progress of the patient's condition is monitored. It is provided by both general practitioners and specialist physicians.

Visit Intensity Groups

While just under 84% of Manitobans make at least one visit to a physician during the year, some patients make much more frequent contact than others. Patients are classified into three visit-intensity groups, as a function of how many ambulatory visits were made throughout the year: 1 to 7, 8 to 14, or 15 or more.

Location of Care

Residents of given regions often receive ambulatory care from physicians outside of their home region. Utilization rates are presented for visits in the resident's home region (In Region), in another region other than Winnipeg (Out Of Region: Not Winnipeg), and in Winnipeg (Out of Region: Winnipeg). In some cases, physicians based in Winnipeg may travel to rural and remote regions to conduct clinics over a short period of time. Since we defined location of care based on physician's location, we have classified such care as occurring in Winnipeg. Since there is presently no explicit coding of this type of physician activity we are not presenting separate analyses at this time. However, algorithms which do so are being tested for future reports of the Physician Use Module.

Key Findings

Use of Physician Resources In Manitoba

Supply and Utilization of Physician Specialists

Over the course of fiscal year 1991-92 Manitoba had a total supply of 1,316 physicians providing ambulatory care services to Manitobans (Figure 2). Of these, 752, or just over 57%, are general practitioners. Medical specialists are the largest speciality group in Manitoba (161), followed by surgical specialists (118) and psychiatrists (88¹⁵). As a group, specialists provide approximately 25% of all ambulatory services used by residents of Manitoba (Table 1 and Figure 3), but because of their higher fee schedules, account for over 37% of the total expenditures.

Utilization by Type of Care

In fiscal year 1991-92, 83.6% of Manitobans made at least one contact with a physician during the year (Table 1 and Figure 4). Of these, 83.3% received non-consultative care and 16.9% received consultative care. Residents of Manitoba averaged 497.8 ambulatory visits a year to physicians, per 100 residents. Of these visits, the vast majority (95.5) are for non-consultative care. Consultative care accounts for 4.5% of the total visits (Figure 5), and because of the higher fees paid for consultations, for 11.5% of the total ambulatory physician care expenditures per resident.

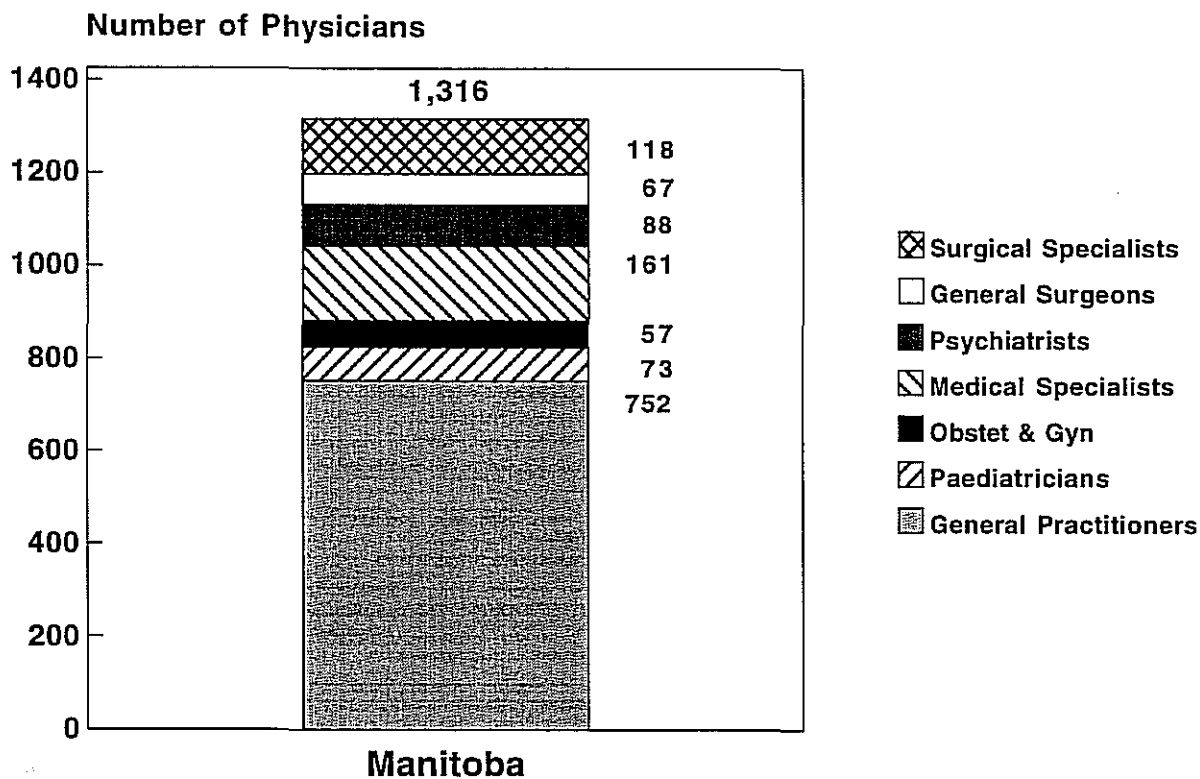
Utilization by Age and Sex of Residents

Table 1 indicates that the majority of individuals in each age and sex group had at least one physician visit throughout the year, with the elderly (aged 65-74 and 75+) having the highest overall rates of contact. However, many more visits were made by the largest cohort, males and females between the ages of 15 and 64.

Figure 6 shows that just as contact rates are the highest among elderly Manitobans, per person expenditures also increase with age. Despite their high use rate, Table 1 and the second graph in Figure 6 show that the very elderly (75+) have a relatively small impact on

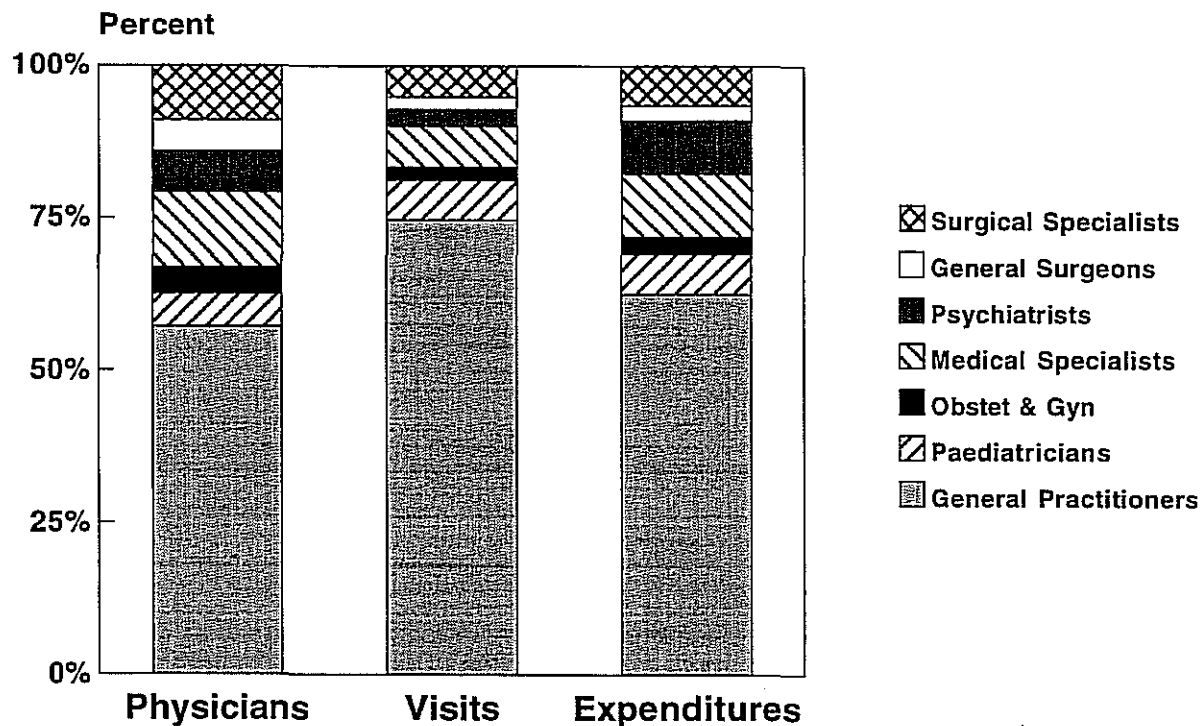
¹⁵ Manitoba Health reports 111 psychiatrists who have some fee for service billings (Annual report, 1991-92, Table 12a) receiving \$40,000 or more in total (salary and FFS) income. Analyses of the physician claims identified 88 psychiatrists who submitted fee for services or evaluation claims totalling over \$40,000 and who are therefore included in this report. The report, consequently, underestimates provincial use of psychiatrists, particularly in the Winnipeg region, where almost all psychiatrists reside.

Figure 2. Supply of Physicians in Manitoba



msupsp.ch3

Figure 3. Physician Supply, Visits and Expenditures
Percent Distribution in Manitoba



supvlx.ch3

Key Findings: Table 1

Manitoba Utilization¹ of Physician Resources: by Characteristics of Care, Residents, and Physician Specialty

	Percent making contact ²	Visits per 100 residents		Expenditures per resident	
			%		%
Overall	83.6	497.8	(100.0)	112.46	(100.0)
Consultative ³	16.9	22.2	(4.5)	12.91	(11.5)
Non-Consultative ³	83.3	475.6	(95.5)	99.55	(88.5)
Age & Sex of Residents ⁴					
0-14 yrs Males	87.0	50.7	(10.2)	10.87	(9.7)
Females	88.0	47.5	(9.5)	10.00	(8.9)
15-64 yrs Males	73.4	114.2	(22.9)	26.35	(23.4)
Females	87.7	182.3	(36.6)	42.61	(37.9)
65-74 yrs Males	89.0	22.9	(4.6)	5.08	(4.5)
Females	91.0	29.2	(5.9)	6.43	(5.7)
75+ yrs Males	94.6	19.3	(3.9)	4.27	(3.8)
Females	95.2	31.7	(6.4)	6.84	(6.1)
Visit Intensity Group					
1-7 visits	61.8	204.8	(41.1)	44.76	(39.8)
8-14 visits	15.7	160.6	(32.3)	34.81	(31.0)
15+ visits	6.1	132.4	(26.6)	32.89	(29.2)
By Physician Specialty					
General Practitioners	76.2	372.2	(74.8)	70.43	(62.6)
Paediatricians	9.1	32.9	(6.6)	7.41	(6.6)
Obstet & Gyn	5.6	10.3	(2.1)	3.05	(2.7)
Medical Specialists ⁵	12.7	33.4	(6.7)	11.72	(10.4)
Psychiatrists	1.7	13.6	(2.7)	9.74	(8.7)
General Surgeons	5.0	10.4	(2.1)	2.82	(2.5)
Surgical Specialists ⁶	13.6	25.1	(5.0)	7.29	(6.5)

¹All rates have been age- and sex-adjusted using Manitoba population proportions and the direct method of adjustment.

²The rate of persons making contact with a physician is a useful indicator of the ability of people to receive physician services and is therefore relevant for comparisons of access.

³As defined by Manitoba Health Physician manual, 1990 (also see Methods section).

⁴Rates in each age and sex group have been age- and sex-adjusted to the Manitoba population using the direct method of adjustment.

⁵Medical Specialists include general internists plus those with a subspecialty such as neurology, geriatrics, rheumatology, etc.

⁶Surgical Specialists include all specialists such as thoracic & cardiovascular, plastic, urology, etc.

Figure 4. Access to Physicians
by Type of Care

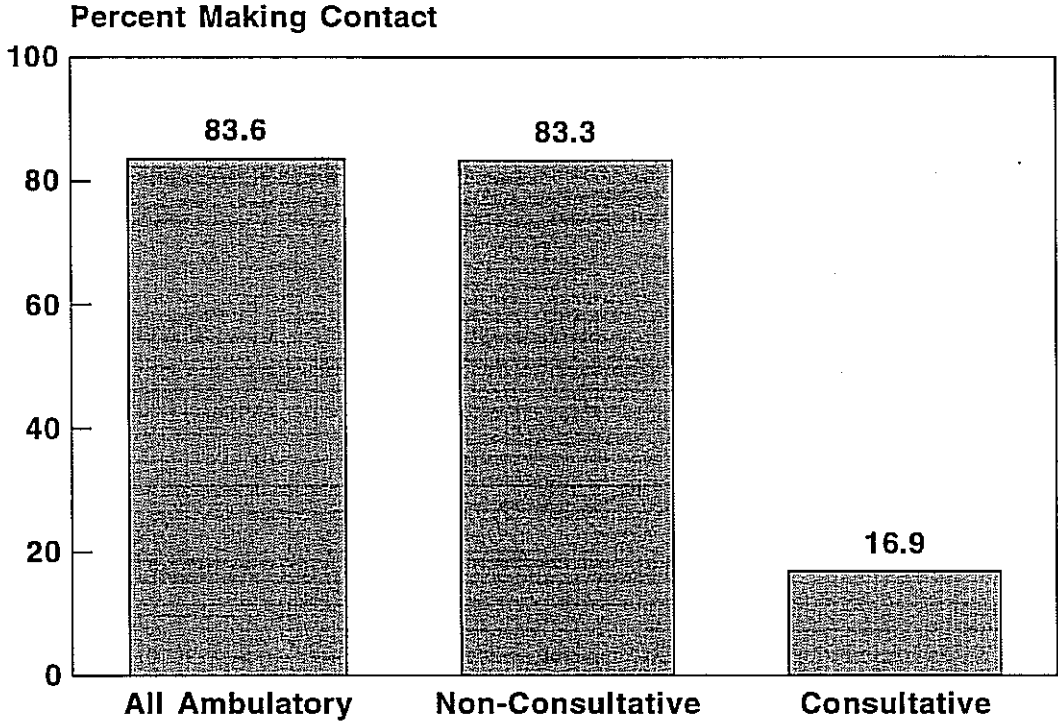
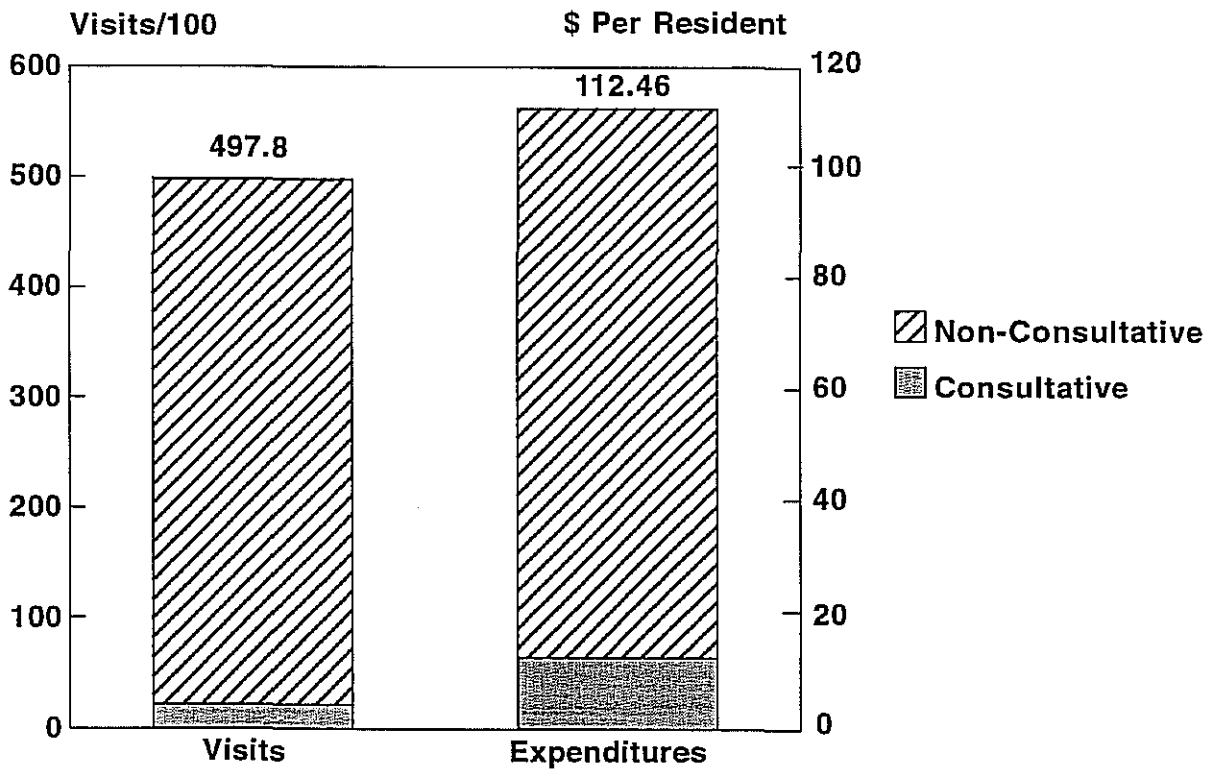
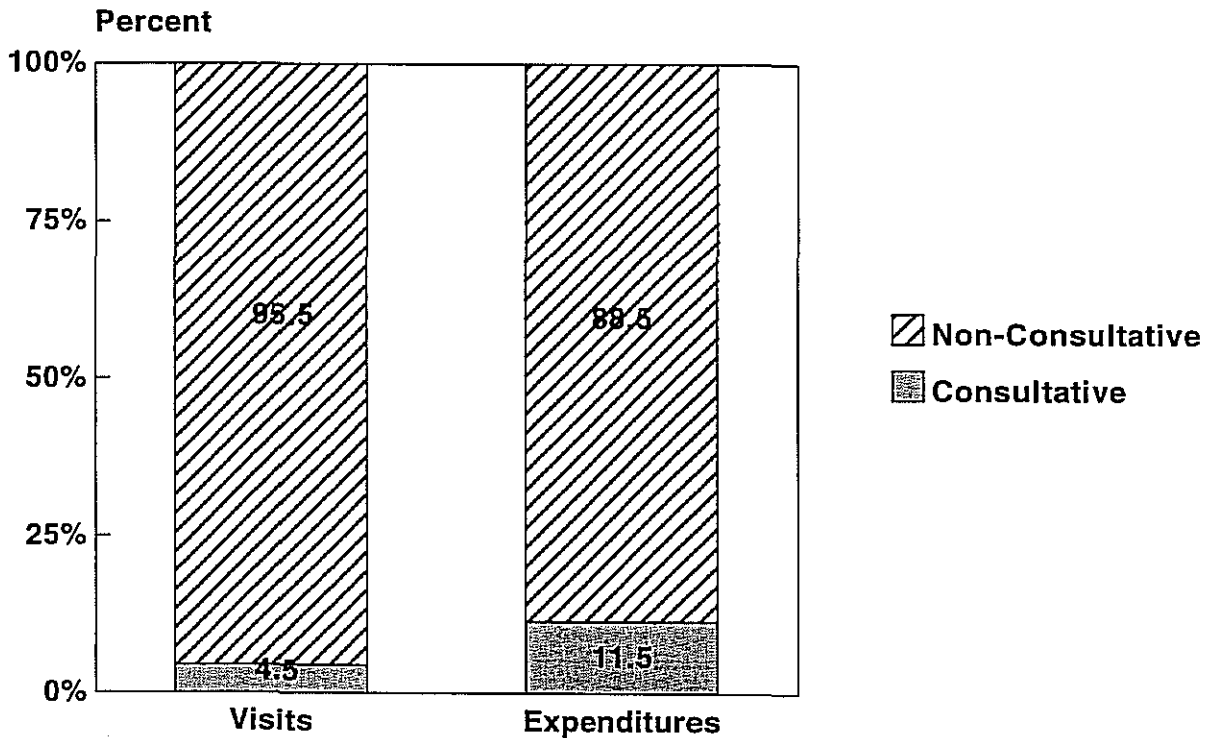


Figure 5. Utilization by Type of Care
Visits/100 and Expenditures



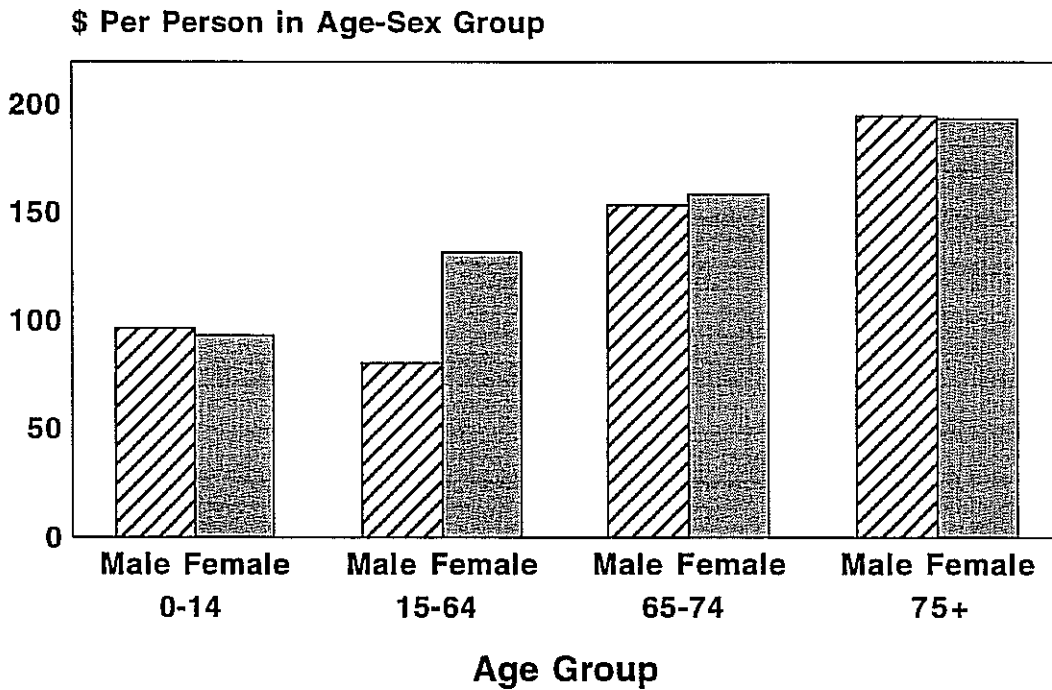
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Visits/100 and Expenditures: Percent Distribution



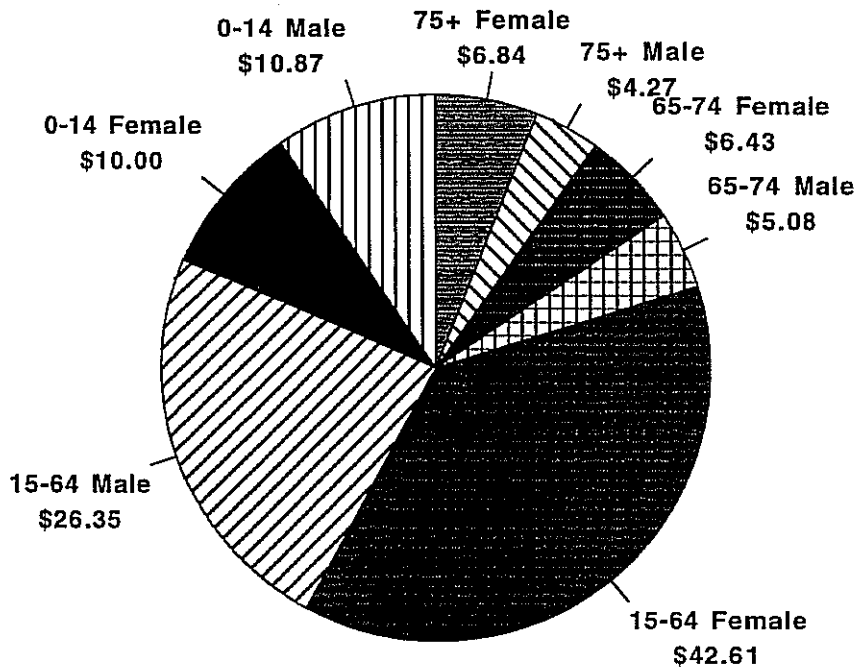
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Figure 6. Utilization by Age and Sex of Residents
 Expenditures per Age-Sex Group:
 Averaged to Persons within Age-Sex Group



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Expenditures Per Age-Sex Group:
 Averaged to all Provincial Residents



totexp.ch3

physician expenditures: they comprise only 6% of the population and account for only 9.9% (3.8+6.1) of the provincial expenditures for ambulatory physician services. In contrast, 61.3% (23.4+37.9) of expenditures are for the population aged 15-64 years.

Utilization by Visit Intensity Groups

Over 16% of the population did not contact a physician during the year (Table 1 and Figure 7). The majority of the population (61.8%) made 1-7 visits a year (average for this group: 3.32 visits per year). This group accounts for 41.1% of contacts made to physicians and 39.8% of the province's expenditures on physician contact. A second group, 15.7% of the population made 8-14 visits (average 10.2 visits per year). This group accounts for 32.3% of all visits between patients and physicians, and 31.0% of expenditures. A small proportion of the Manitoba population (6.1%) visited a physician more than 15 times throughout the year. As a group, these people accounted for 26.6% of all physician visits, and 29.2% of all expenditures. Thus, less than one quarter of the population (those making 8 or more visits per year) accounts for approximately 60% of the total physician utilization whether measured in visits or expenditure.

Winnipeg to Non-Winnipeg Comparisons

Indicators of Need for Health Care

Both the Socio-Economic Risk index (Frohlich and Mustard, 1994) and the 0 to 64 Year Standardized Mortality Ratio (SMR; Cohen and MacWilliam, 1994) suggested Winnipeg and non-Winnipeg regions are not dissimilar in their need for health services (Figure 8). This inference was supported by a statistical test of the SMRs, with 95% confidence intervals indicating both the non-Winnipeg ($.98 \leq \text{SMR} \leq 1.13$) and Winnipeg ($.90 \leq \text{SMR} \leq 1.01$) regions to be indistinguishable from the Manitoba rate.

Overview of Physician Supply

In fiscal year 1991-92 there were 958 physicians practising in Winnipeg. With just over 655,000 people living in Winnipeg, this works out to 1.46 physicians for every 1,000 Winnipeg residents (Table 2). The non-Winnipeg regions have a total of 358 physicians serving a population of about 485,000 people, an average of 0.74 physicians per 1,000 residents.

Figure 7. Utilization by Visit Intensity Group
Percent of Population, Visits and Expenditures

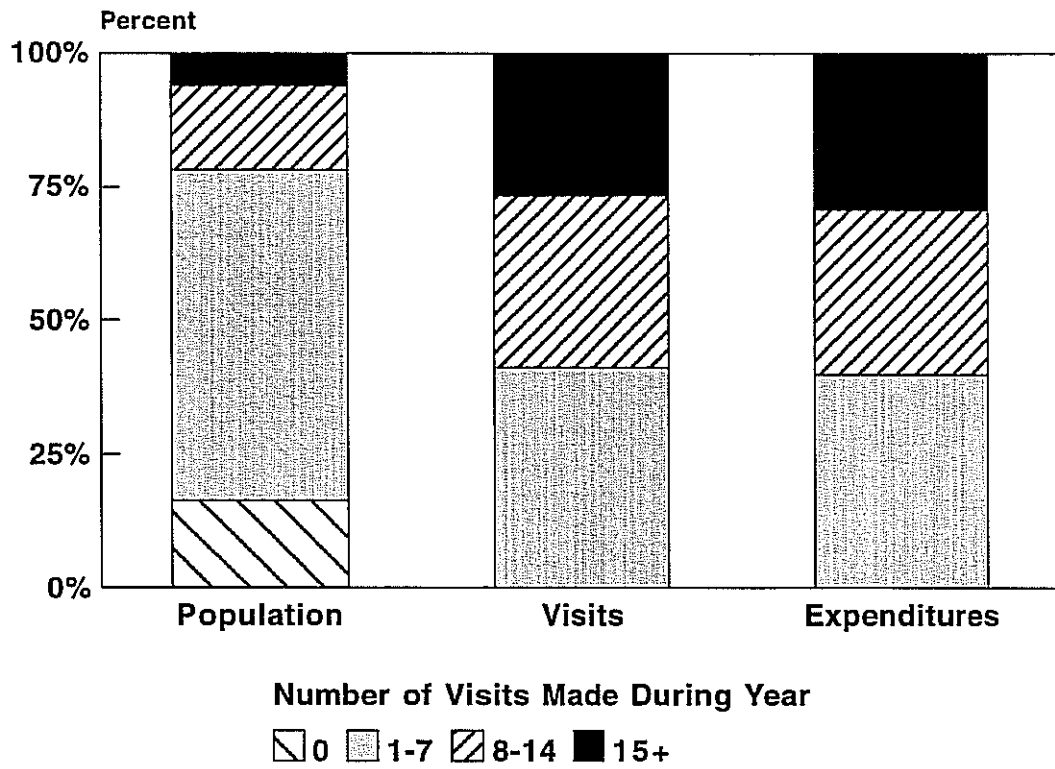
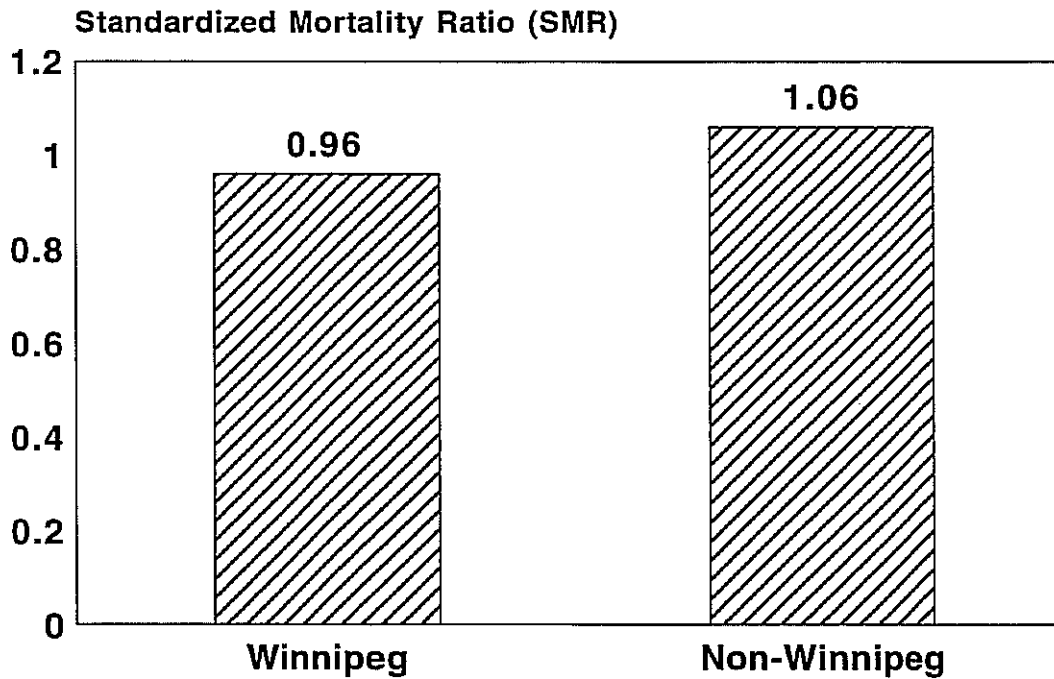
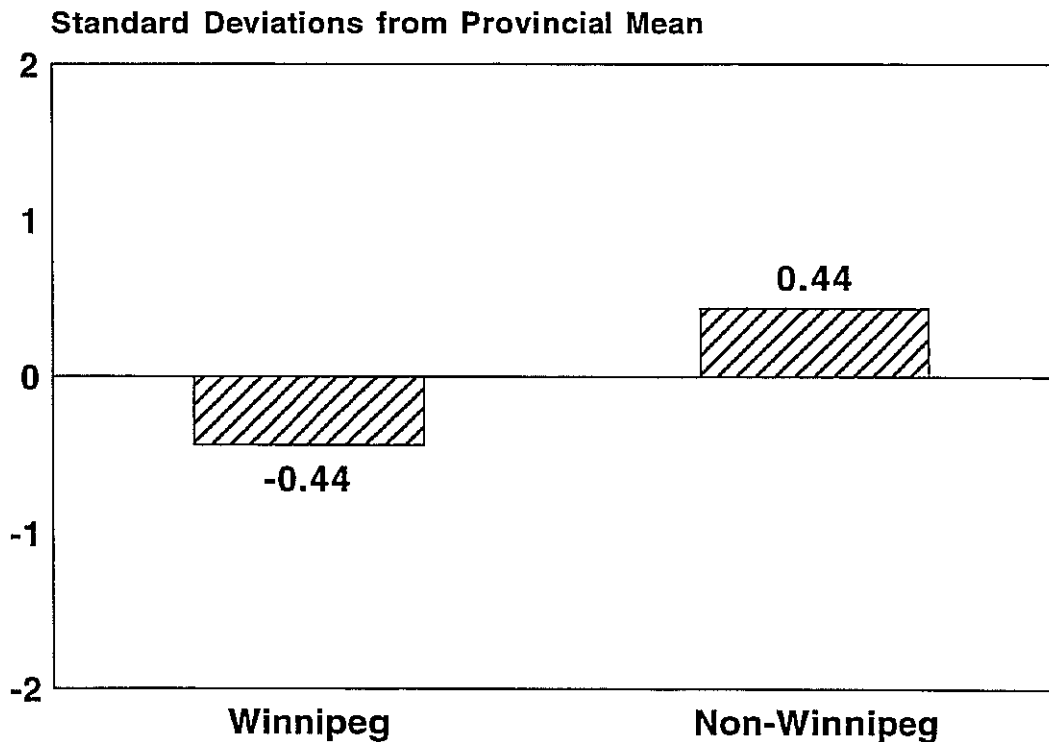


Figure 8. Indicators of Need: Winnipeg/Non-Winnipeg Standardized Mortality Ratio (SMR) of Individuals Aged 0-64



SMRWPG.ch3

Socio-Economic Risk Index



REGSCOR2.ch3

Key Findings: Table 2

Physicians per 1000 Residents:
Comparison of Winnipeg and Non-Winnipeg Regions

	Winnipeg ¹	Non- Winnipeg ¹	Difference: Winnipeg to Non-Winnipeg	Ratio: Winnipeg to Non-Winnipeg
	%	%	%	
Overall Supply	1.46 (100.0)	0.74 (100.0)	0.72 (100.0)	1.97
By Physician Specialty				
General Practitioners	0.68 (46.6)	0.64 (86.5)	0.04 (5.6)	1.06
Paediatricians	0.10 (6.8)	0.01 (1.4)	0.09 (12.5)	10.00
Obstet & Gyn	0.08 (5.5)	0.01 (1.4)	0.07 (9.7)	8.00
Medical Specialists ²	0.23 (15.8)	0.03 (4.1)	0.20 (27.8)	7.67
Psychiatrists	0.13 (8.9)	0.01 (1.4)	0.12 (16.7)	13.00
General Surgeons	0.08 (5.5)	0.03 (4.1)	0.05 (6.9)	2.67
Surgical Specialists ³	0.17 (11.6)	0.01 (1.4)	0.16 (22.2)	17.00

¹Physicians per 1000 residents of region

²Medical Specialists include general internists plus those with a subspecialty such as neurology, geriatrics, rheumatology, etc.

³Surgical Specialists include all specialists such as thoracic & cardiovascular, plastic, urology, etc.

Although 46.6% of Winnipeg's physicians were general practitioners, compared with 86.5% of physicians serving the non-Winnipeg regions, both Winnipeg and non-Winnipeg regions had an almost equal supply of general practitioners per 1000 residents. In contrast to this, almost all of Manitoba's specialty physicians reside in Winnipeg: Approximately 53% of Winnipeg's physicians were specialists, compared to 13.5% in non-Winnipeg regions. The majority of specialists (75%) practising outside of Winnipeg resided in the Westman region. The greater numbers of medical specialists, psychiatrists, and surgical specialists in Winnipeg accounted for 66.7% (27.8+16.7+22.2) of the difference in physician supply between Winnipeg and the rest of the province.

Comparison of Crude and Adjusted Rates

The age- and sex-adjustment yields 'synthetic' rates that have the potential of differing considerably from the crude utilization rates of a region. Adjustment changes each region's rate to what it would be, if it had a population structure similar to that of Manitoba as a whole. The Winnipeg and non-Winnipeg regions have very similar age structures and thus the age- and sex-adjustments have no effect on the rates.

Overview of Utilization of Ambulatory Care
















Though about twice as many physicians were available to Winnipeg residents in their area of residence compared with non-Winnipeg residents (Table 2), access to physicians, as measured by percent of persons who had a physician contact during the year was only slightly higher: 85.2% of Winnipeg residents had a physician visit during 1991-92, compared with 81.4% of rural residents (Table 3). Among those with one or more visits, Winnipeg residents also had a higher average number of visits (11% higher). Overall, Winnipeg residents had 16% more visits per resident and the province spends 26% more per capita on physician visits for Winnipeg residents than it spends on rural residents.

Overview of Utilization by Type of Care

Winnipeg residents had much higher access to consultative care than did rural residents, being 37% more likely to have a consultation visit (Table 3). For individuals who received consultative care however, average number of visits were identical. There was a 45% higher rate of consultation visits per 100 Winnipeg residents: 25.6 for Winnipeg residents versus 17.6 for non-Winnipeg residents. Expenditures per capita for consultative care were \$14.91 per Winnipeg resident and \$10.15 per rural resident, a difference of 47%.

Key Findings: Table 3

Utilization¹ by Type of Care:
Comparison of Winnipeg and Non-Winnipeg Residents

	Winnipeg Residents	Non-Winnipeg Residents	Ratio: Winnipeg to Non-Winnipeg	Bar Chart of Winnipeg/Non-Winnipeg Ratio
				0.0 0.5 1.0 1.5
All Ambulatory Care²:				
Percent of residents making contact ³	85.2	81.4	1.05	
Visits per patient	6.2	5.6	1.11	
Visits per 100 residents	529.0	456.4	1.16	
Expenditures per visit	23.26	21.45	1.08	
Expenditures per resident	123.03	97.91	1.26	
Consultative Care⁴:				
Percent of residents making contact ³	19.1	13.9	1.37	
Visits per patient	1.3	1.3	1.00	
Visits per 100 residents	25.6	17.6	1.45	
Expenditures per visit	58.23	57.63	1.01	
Expenditures per resident	14.91	10.15	1.47	
Non-Consultative Care⁴:				
Percent of residents making contact ³	85.0	81.2	1.05	
Visits per patient	5.9	5.4	1.09	
Visits per 100 residents	503.4	438.8	1.15	
Expenditures per visit	21.48	20.00	1.07	
Expenditures per resident	108.12	87.77	1.23	

¹All rates have been age- and sex-adjusted using Manitoba population proportions and the direct method of adjustment.

²Consists of all consultative and non-consultative care in which the patient is considered ambulatory - non-inpatient physician contact.

³The rate of persons making contact with a physician is a useful indicator of the ability of people to receive physician services and is therefore relevant for comparisons of access.

⁴As defined by Manitoba Health physician manual, 1990 (also see method section).

In contrast, relative differences in access were not great for non-consultative care. Over the 1991/2 fiscal year, 85.0% of Winnipeg residents received a non-consultative physician visit, compared with 81.2% of non-Winnipeg residents, a difference of 5%. However, of those who had such a visit, Winnipeg residents had 9% more visits (5.9 for Winnipeg versus 5.4 for rural residents). The higher rate of access and the higher average number of visits led to a 15% higher rate of use of non-consultative physician visits for Winnipeg residents. Average cost per visit was 7% higher for Winnipeg residents, related to a greater proportion of visits made to specialist physicians. This, combined with a 15% higher visit rate, accounted for the province spending 23% more per capita on Winnipeg residents for non-consultative care.

Access to Care by Age and Sex of Residents

Despite marked differences in physician supply, both Winnipeg and non-Winnipeg residents have good access to care with over 95% of the elderly contacting a physician during the year regardless of where they live. In every age-group Winnipeg residents were somewhat more likely to make at least one physician contact, with the differences up to 10% for males and females aged 0-14. Access rates among elderly residents of both areas were almost identical (see Table 4).

Access to Physician Specialists by Type of Care

As seen in Table 5 and Figure 9, Winnipeg residents had greater access to specialists in general, with smaller differences in access to general surgeons than to other specialists. With the exception of psychiatry, the biggest differences were in Winnipeg residents' higher rates of access to specialists for non-consultive care.

Total Use of the System (Visits/1000)

During fiscal year 1991/92 Winnipeg residents made 72.5 more visits per 100 residents than did non-Winnipeg residents, representing a 16% higher rate of use (Table 6). Practically, this amounts to an additional 0.7 (72.5/100) visits per resident. The overall absolute difference of 72.5 visits between Winnipeg and non-Winnipeg regions can be disaggregated in different ways:

By Type of Care: Even though Winnipeg residents' had 45% more consultative visits, consultations account for only 8 of the 72.5 more visits per year made by Winnipeg residents

Key Findings: Table 4

**Access to Physicians By Age and Sex¹ of Residents:
Comparison of Winnipeg and Non-Winnipeg Residents**

	Winnipeg ²	Non-Winnipeg ²	Ratio: Winnipeg to Non-Winnipeg
Overall	85.2	81.4	1.05
Age & Sex of Resident ¹			
0-14 yrs Males	90.3	82.1	1.10
Females	91.2	83.2	1.10
15-64 yrs Males	75.1	71.0	1.06
Females	88.4	86.6	1.02
65-74 yrs Males	90.4	87.3	1.04
Females	91.1	90.9	1.00
75+ yrs Males	97.8	97.1	1.01
Females	97.1	96.9	1.00

¹Rates in each age and sex group have been age- and sex-adjusted to the Manitoba population using the direct method of adjustment.

²Percentage of residents in region who made at least one physician visit throughout the year.

Key Findings: Table 5

Access to Physicians by Type of Care and Provider Specialty:
Comparison of Winnipeg and Non-Winnipeg Residents

Physician Specialty	Winnipeg ¹	Non-Winnipeg ¹	Ratio: Winnipeg to Non-Winnipeg	Bar Chart of Winnipeg/Non-Winnipeg Ratio					
				0.0	1.0	2.0	3.0	4.0	
Consultative Care²									
Paediatricians	0.3	0.5	0.60						
Obstet & Gyn	2.5	1.7	1.47						
Medical Specialists ³	7.7	4.8	1.60						
Psychiatrists	0.7	0.2	3.50						
General Surgeons	2.7	2.5	1.08						
Surgical Specialists ⁴	7.7	4.5	1.71						
Non-Consultative Care²									
Paediatricians	12.7	4.6	2.76						
Obstet & Gyn	5.8	2.5	2.32						
Medical Specialists ³	12.9	4.3	3.00						
Psychiatrists	2.2	0.5	4.40						
General Surgeons	3.5	3.1	1.13						
Surgical Specialists ⁴	12.1	6.8	1.78						
Non-Specialized Care (General Practitioners)									
Consultative Care ²	1.1	1.8	0.61						
Non-Consultative Care ²	74.6	78.0	0.96						

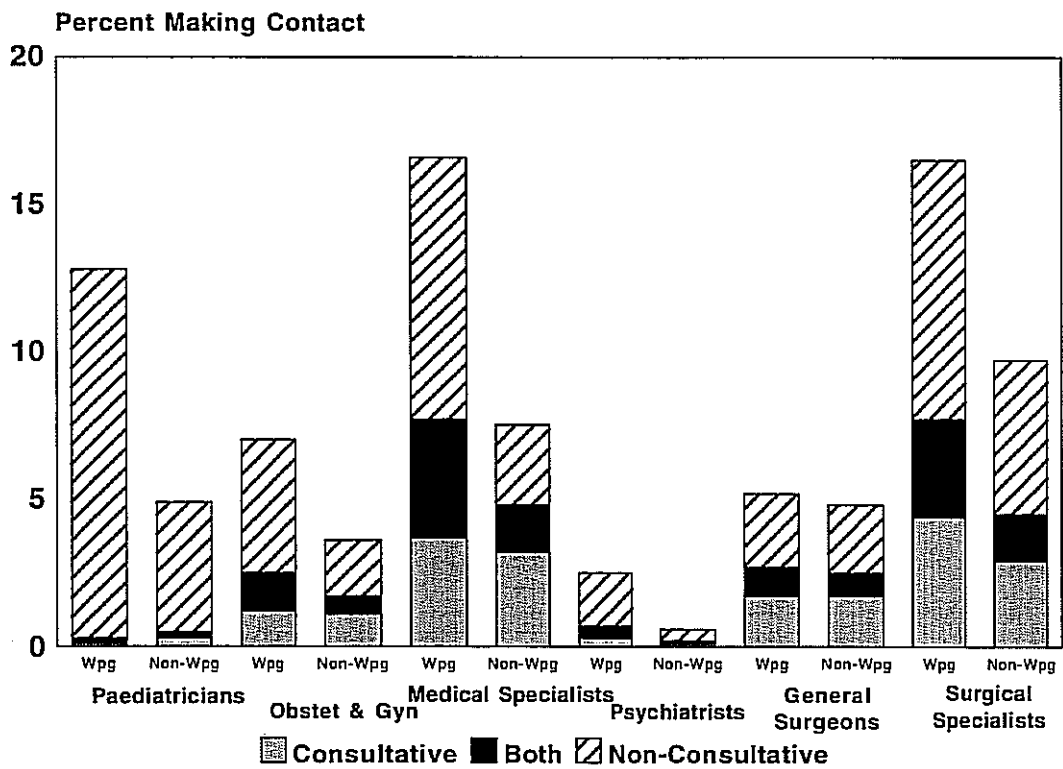
¹Percent of residents in region who made at least one physician visit throughout the year.

²As defined by Manitoba Health Physician manual, 1990 (also see method section).

³Medical Specialists include general internists plus those with a subspecialty such as neurology, geriatrics, rheumatology, etc.

⁴Surgical Specialists include all specialists such as thoracic & cardiovascular, plastic, urology, etc.

Figure 9. Percent Making Contact with Specialists by Type of Care



Key Findings: Table 6

Visits per 100 Residents By Characteristics of Care, Residents and Physician Specialty: Comparison of Winnipeg and Non-Winnipeg Residents

	Winnipeg ¹	Non- Winnipeg ¹	Difference: Winnipeg to Non-Winnipeg	Ratio: Winnipeg to Non-Winnipeg
Overall	529.0	456.4	72.5	1.16
Type of Care				
Consultative ²	25.6	17.6	8.0	1.45
Non-Consultative ²	503.4	438.8	64.5	1.15
Age & Sex of Residents ³				
0-14 yrs Males	55.8	45.0	10.8	1.24
Females	51.9	42.6	9.3	1.22
15-64 yrs Males	123.3	101.4	21.9	1.22
Females	190.2	170.5	19.7	1.12
65-74 yrs Males	24.2	21.4	2.8	1.13
Females	30.1	27.9	2.2	1.08
75+ yrs Males	20.5	18.1	2.4	1.13
Females	33.0	30.0	3.0	1.10
Visit Intensity Group				
1-7 visits	209.0	199.6	9.4	1.05
8-14 visits	172.5	145.2	27.3	1.19
15+ visits	147.5	111.7	35.8	1.32
Physician Specialty				
General Practitioners	358.0	389.4	-31.4	0.92
Paediatricians	48.8	15.2	33.6	3.21
Obstet & Gyn	12.9	6.2	6.7	2.08
Medical Specialists ⁴	46.3	15.9	30.4	2.91
Psychiatrists	20.6	3.3	17.3	6.24
General Surgeons	10.8	9.8	1.0	1.10
Surgical Specialists ⁵	31.6	16.5	15.1	1.92

¹Visits per 100 residents

²As defined by Manitoba Health Physician manual, 1990 (also see Methods section).

³Rates in each age and sex group have been age- and sex-adjusted to the Manitoba population using the direct method of adjustment.

⁴Medical Specialists include general internists plus those with a subspecialty such as neurology, geriatrics, rheumatology, etc.

⁵Surgical Specialists include all specialists such as thoracic & cardiovascular, plastic, urology, etc.

to physicians. Winnipeg residents' higher differential use of physician services is accounted for by the much higher rate of use of non-consultative care. While representing only a 15% higher relative rate of use, residents of Winnipeg have an average of 64.5 more visits per 100 residents for this type of care.

By Age and Sex of Residents: Those aged 15-64 have the biggest impact on Winnipeg's higher use of physicians, accounting for 57% $((21.9+19.7)/72.5)$ of the difference in the Winnipeg/ non-Winnipeg usage patterns. Winnipeg children (aged 0-14) also account for a large proportion of the difference $((10.8+9.3)/72.5=28\%)$, with males receiving 10.8 more visits per 100 residents and females 9.3 more. For residents aged 65 or more, the difference in visit rates between Winnipeg and non-Winnipeg is 3 or less per 100 residents.

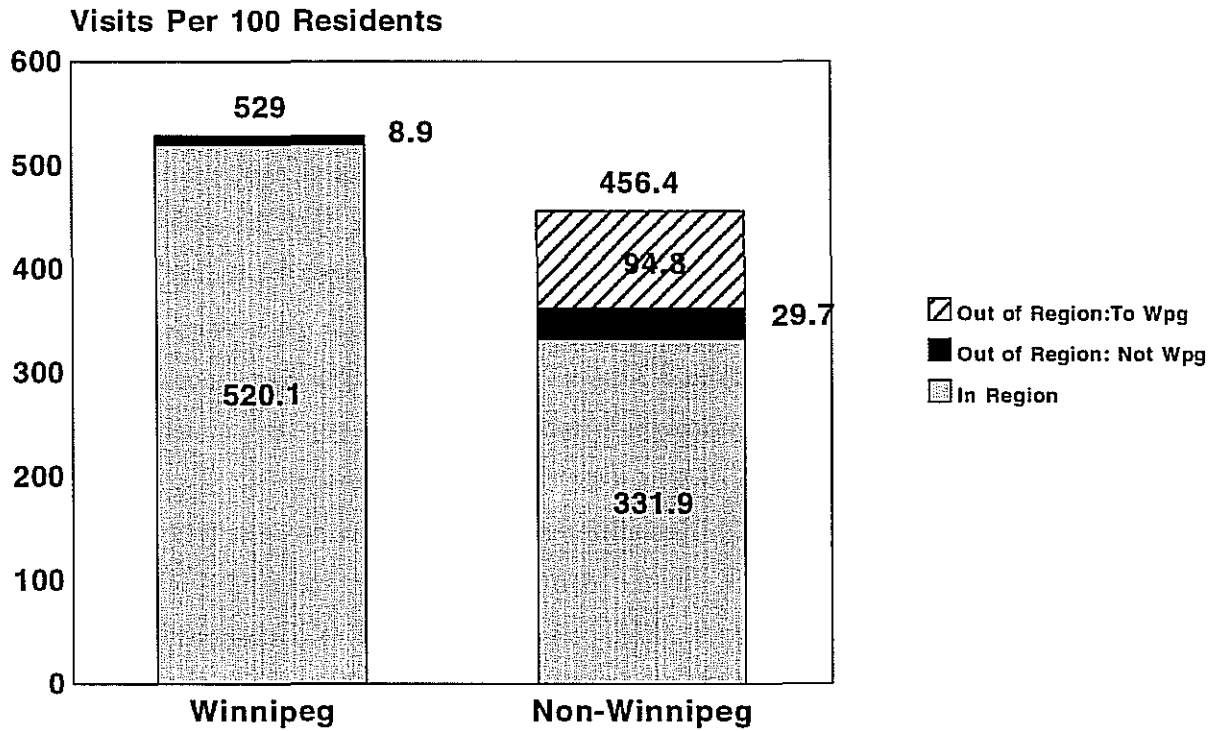
By Visit Intensity Group: The biggest differences in visit rates between Winnipeg and non-Winnipeg regions is accounted for by the high use group (15 or more visits a year). This small group of people accounts for almost half $(35.8/72.5=49.4\%)$ of the additional visits made by Winnipeg residents.

By Physician Specialty: Winnipeg residents' higher rate of use of physicians were produced by much higher rates of visits to paediatricians, medical specialists, and psychiatrists. For example, while general practitioners provide much of the paediatric care in rural Manitoba, Winnipeg children have 3.21 times as many contacts with paediatricians as do non-Winnipeg children. Given Winnipeg's lower use of general practitioners (31.4 fewer visits per 100), it appears that there is substitution between the primary care services provided by general practitioners in rural Manitoba and the ongoing care provided by medical specialists, paediatricians, and psychiatrists, in Winnipeg.

By Location of Care: Almost all Winnipeg residents contact physicians within their own region (98.3%: Figure 10). In contrast, only 72.7% of non-Winnipeg residents' visits occur in their own region of residence. Of the remaining 27.3%, 6.5% of their visits occur in a region other than Winnipeg, and 20.8% of their visits were made to Winnipeg physicians.

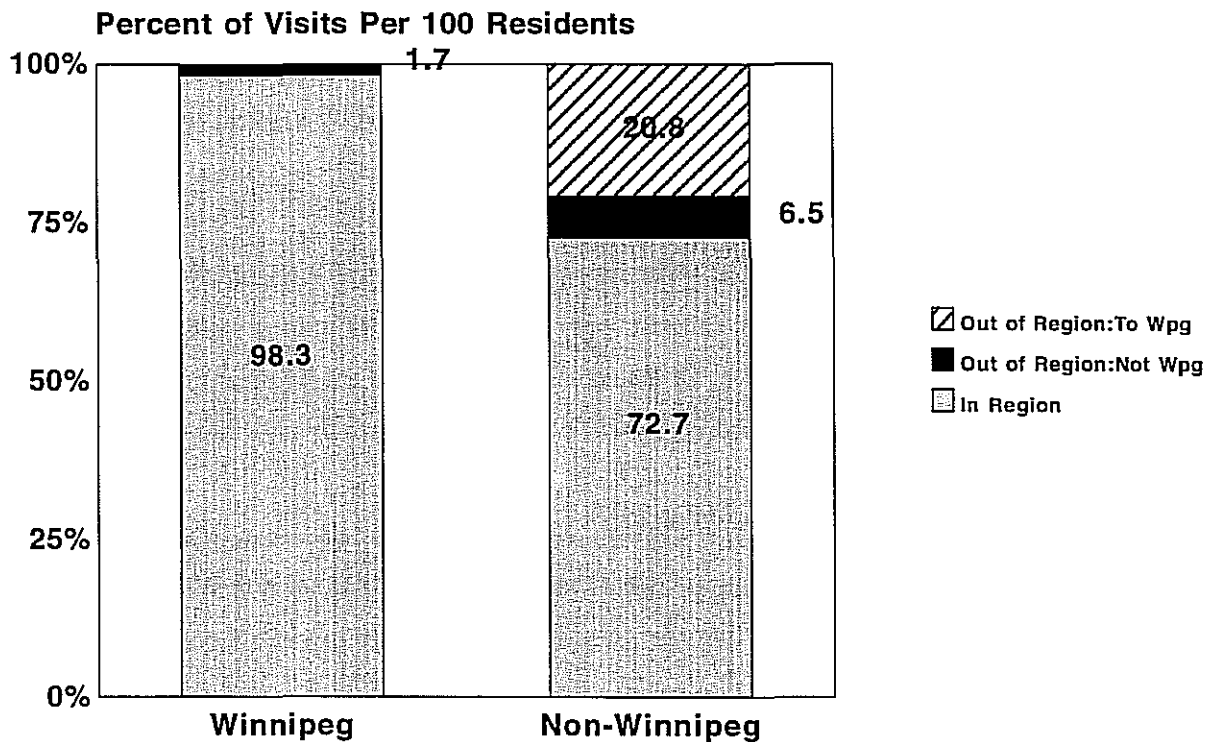
By Physician Specialty and Type of Care: Similar to the patterns seen in access, residents of Winnipeg made considerably more visits to most specialists than do non-Winnipeg residents (Figure 11). Most of these differences in utilization were due to visits for non-consultative

Figure 10. Utilization by Location of Care
Visits Per 100 Residents



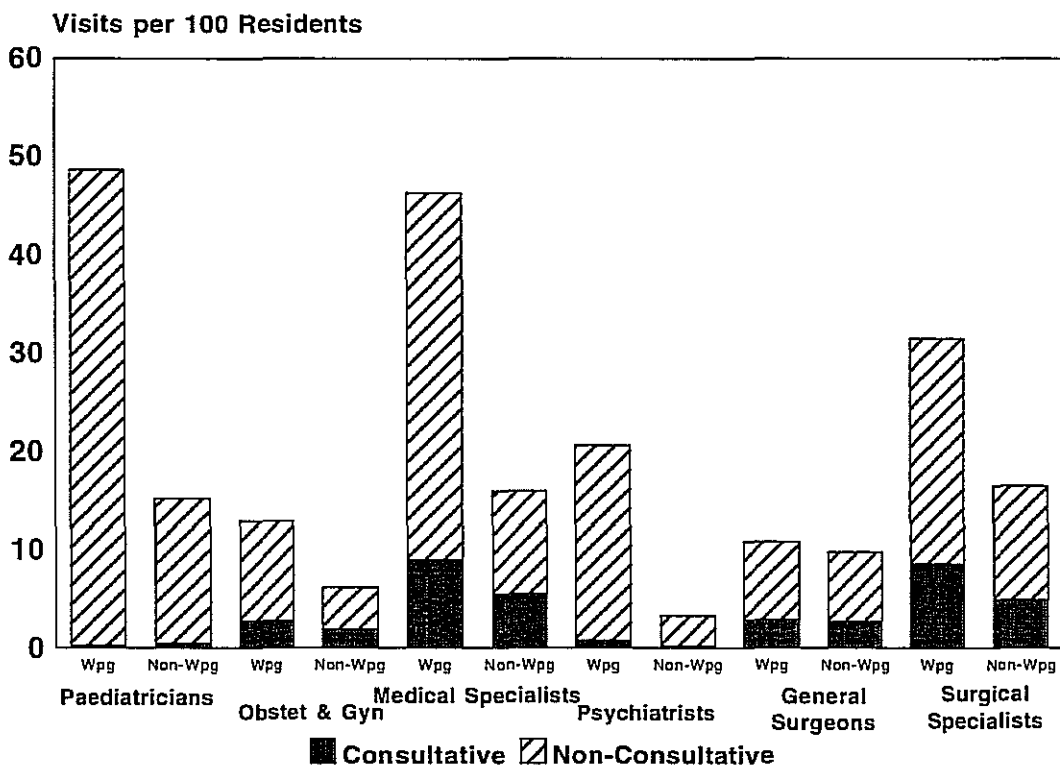
RVISWH.CH3

Percent of Visits Per 100 Residents



RVIS%WH.CH3

Figure 11. Visits per 100 Residents with Specialists by Type of Care



care. Paediatrics and medical specialists provide the greatest amount of such care, apparently serving as primary care physicians in Winnipeg.

Expenditures on Physician Services (\$/resident)

On average the province spends approximately 26% more per resident to provide physician services to Winnipeg residents than it spends on physician services to non-Winnipeg residents (Table 7). In absolute terms, this represents an additional \$25.11 per resident of Winnipeg. Like the difference in overall use of the system, this difference in expenditures can be disaggregated in different ways:

By Type of Care: While consults account for only 11% ($8.0/72.5$) of the additional per capita expenditure made by the province for Winnipeg residents because physicians are more highly paid for consultative services.

By Age and Sex of Resident: Expenditures on physician visits for Winnipeg men and women aged 15-64, accounted for 68% ($7.19+9.87/25.11$) of the higher expenditures on Winnipeg residents. Winnipeg children (aged 0-14) account for 20% ($(2.6+2.3)/25.11$) of the difference in expenditures.

By Visit Intensity Group: Of the additional \$25.11 spent on Winnipeg residents, fully \$14.54 was spent on the smallest group of the population who are most heavily served, those making 15 or more visits per year. This difference is over twice that of the group making 8-14 visits a year and over four times the difference incurred by the largest group, those making 1-7 visits a year. Figure 12 illustrates the large impact of the high usage group (15+) on total physician expenditures for Winnipeg residents.

By Physician Specialty: Overall the province spent \$9.31 less per Winnipeg resident for care delivered by general practitioners, but \$34.42 more per resident for care delivered by specialists. Most of the extra expenditure on specialists [$(7.08+8.71+12.37)/34.42=82\%$] is for paediatricians, psychiatrists and medical specialists. This suggests that specialists deliver a significant amount of primary care to Winnipeg residents; care that is delivered to rural residents by general practice physicians. Care delivered by psychiatrists cost \$12.37 more per Winnipeg resident. Such care accounted for almost half the difference in expenditures between

Key Findings: Table 7

Dollars per Resident on Physicians by Characteristics of Care, Residents, and Physician Specialty:
Comparison of Winnipeg and Non-Winnipeg Residents

	Winnipeg ¹	Non- Winnipeg ¹	Difference: Winnipeg to Non-Winnipeg	Ratio: Winnipeg to Non-Winnipeg
Overall	123.03	97.92	25.11	1.26
Type of Care				
Consultative ²	14.91	10.15	4.76	1.47
Non-Consultative ²	108.12	87.77	20.35	1.23
Age & Sex of Residents ³				
0-14 yrs Males	12.10	9.50	2.60	1.27
Females	11.09	8.79	2.30	1.26
15-64 yrs Males	29.33	22.14	7.19	1.32
Females	46.55	36.68	9.87	1.27
65-74 yrs Males	5.45	4.63	0.82	1.18
Females	6.79	5.90	0.89	1.15
75+ yrs Males	4.59	3.95	0.64	1.16
Females	7.14	6.43	0.71	1.11
Visit Intensity Group				
1-7 visits	46.26	42.82	3.44	1.08
8-14 visits	37.89	30.75	7.14	1.23
15+ visits	38.88	24.34	14.54	1.60
Physician Specialty				
General Practitioners	66.33	75.64	-9.31	0.88
Paediatricians	10.76	3.68	7.08	2.92
Obstet & Gyn	3.80	1.90	1.90	2.00
Medical Specialists ⁴	15.41	6.70	8.71	2.30
Psychiatrists	14.75	2.38	12.37	6.20
General Surgeons	2.91	2.70	0.21	1.08
Surgical Specialists ⁵	9.07	4.91	4.16	1.85

¹Dollars per 100 residents of region.

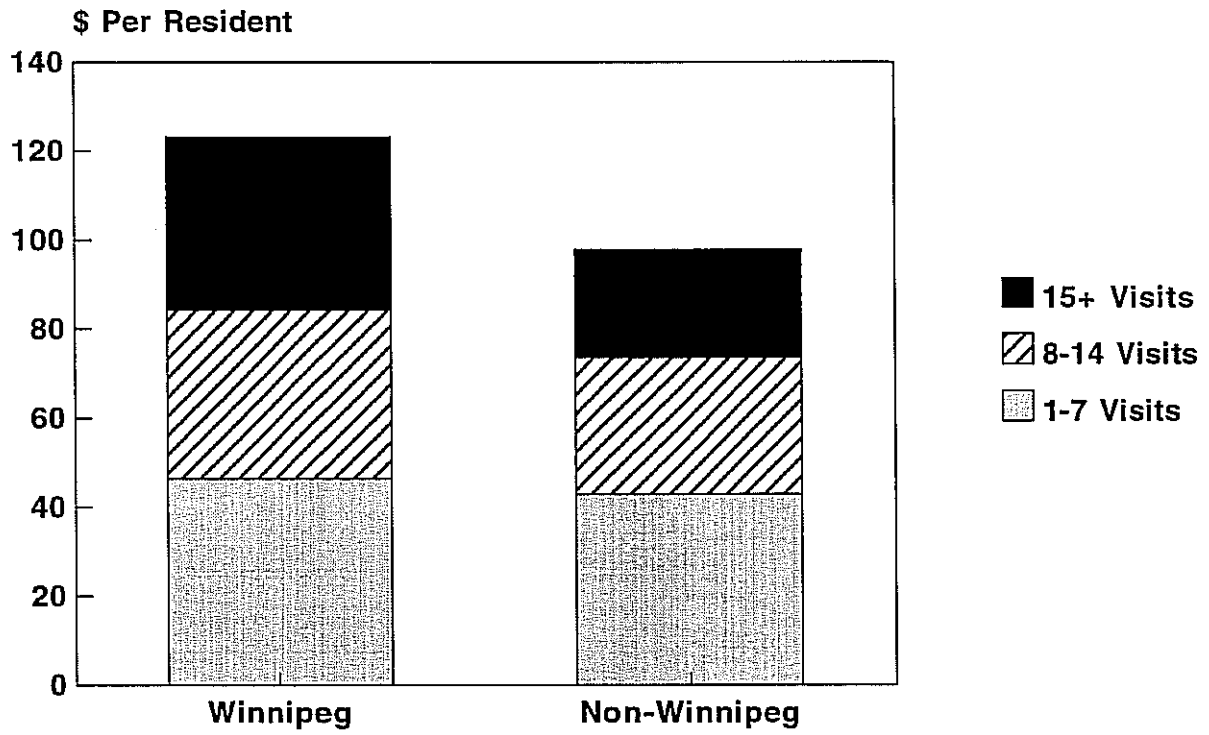
²As defined by Manitoba Health Physician manual, 1990 (also see method section).

³Rates in each age and sex group have been age- and sex-adjusted to the Manitoba population using the direct method of adjustment.

⁴Medical Specialists include general internists plus those with a subspecialty such as neurology, geriatrics, rheumatology, etc.

⁵Surgical Specialists include all specialists such as thoracic & cardiovascular, plastic, urology, etc.

Figure 12. Utilization by Visit Intensity Group
Expenditures Per Resident



the two areas of the province. Residents seen by psychiatrists are serviced very intensely - the average patient is seen for an hour long session and averages eight visits a year. Figure 13 illustrates how the dollars the province spent on physician visits varies across specialists' services delivered to Winnipeg and non-Winnipeg residents.

By Location of Care: Figure 14 illustrates that \$24.66 of every \$97.92 spent on physician services for non-Winnipeg residents goes to Winnipeg physicians.

By Physician Specialty and Type of Care: Expenditures for consultative care were similar for residents of both Winnipeg and non-Winnipeg regions, for most of the specialties (Figure 15). The greatest regional discrepancies were for non-consultative care by psychiatrists, medical specialists, and paediatricians. As mentioned previously, these latter specialties appear to be serving as primary care physicians for residents of Winnipeg.

Regional Comparisons

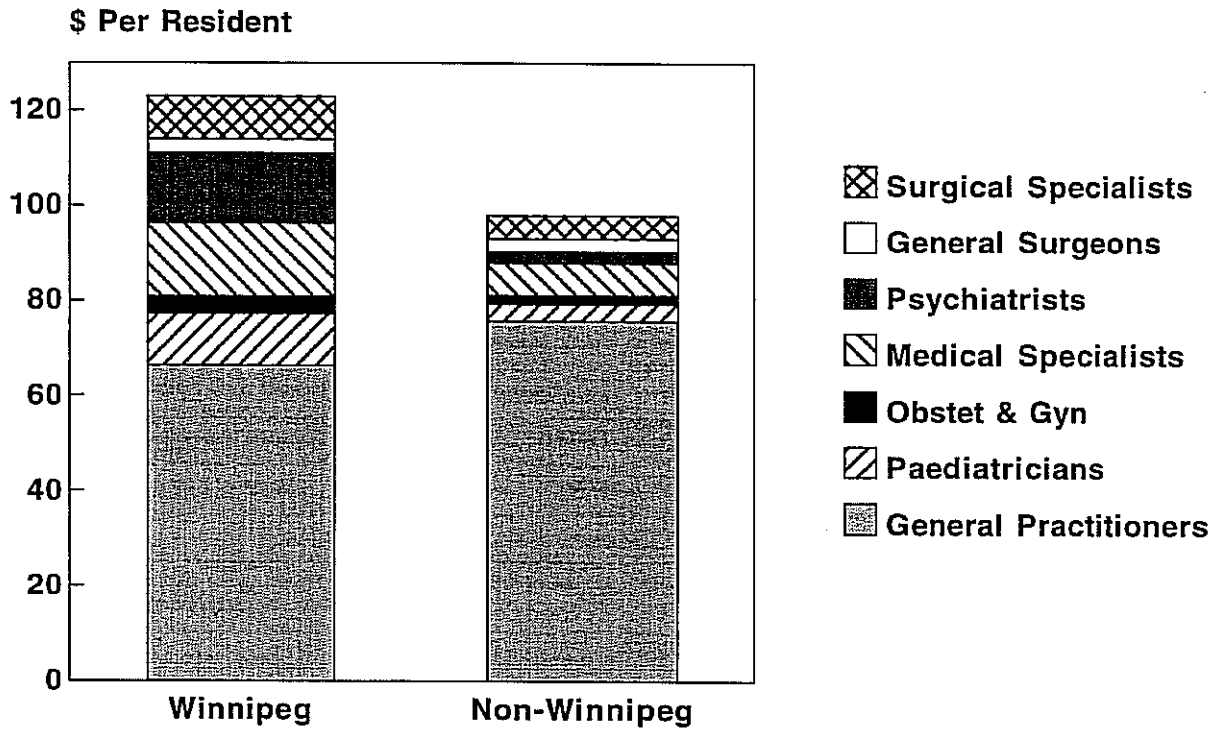
Indicators of Need for Health Care

Regions ranked very similarly on both indicators of need (Figure 16). Both the Socioeconomic Risk Index and the 0-64 Year Standardized Mortality Ratio (SMR) suggested that Westman, Central, and Winnipeg have relatively low needs for care compared to other regions, although the rank orderings were somewhat different. Both indicators ranked Thompson, Norman and Parklands high, with Eastman and Interlake in between.

Because of the potential impact of the indexes, each region was tested for differences from the provincial mean for the SMR. Calculation of 95% confidence intervals indicated the Norman ($1.06 \leq \text{SMR} < 1.81$) and Thompson ($1.39 \leq \text{SMR} \leq 2.05$) regional rates were higher than the provincial mean and Westman ($.71 \leq \text{SMR} \leq .96$) significantly lower. The rest of the regions were not significantly different from the provincial mean.

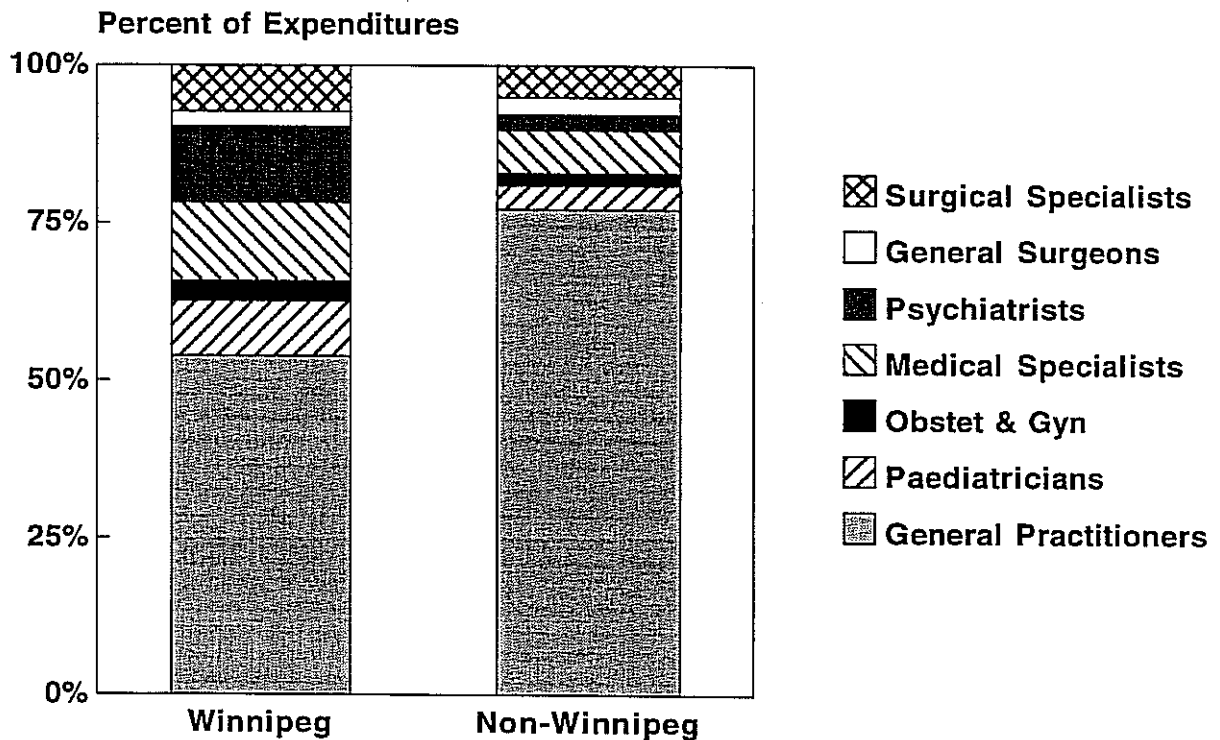
In order to examine, in a preliminary way, the relationship between the utilization of ambulatory physician resources, all regional graphs and tables in subsequent sections of this report order regions according to the rankings in the 0-64 Standardized Mortality Ratio.

Figure 13. Utilization by Physician Specialty
Expenditures Per Resident



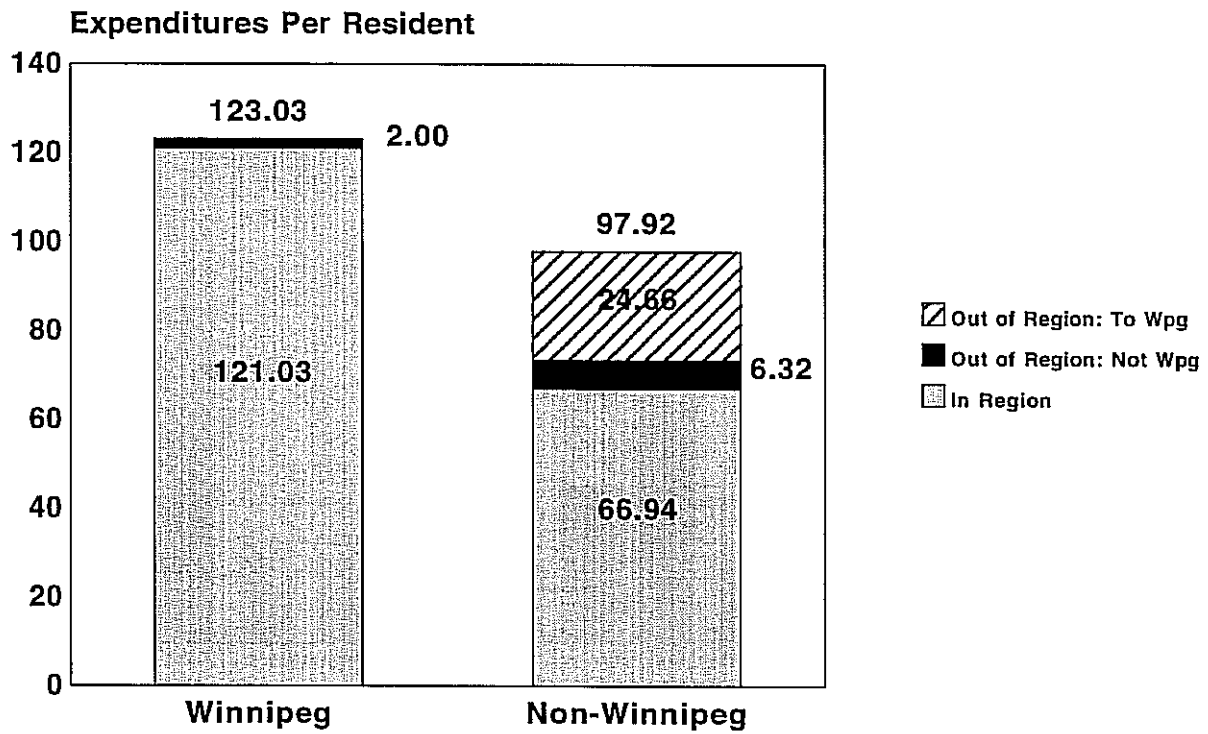
expssp.ch3

Percent of Expenditures



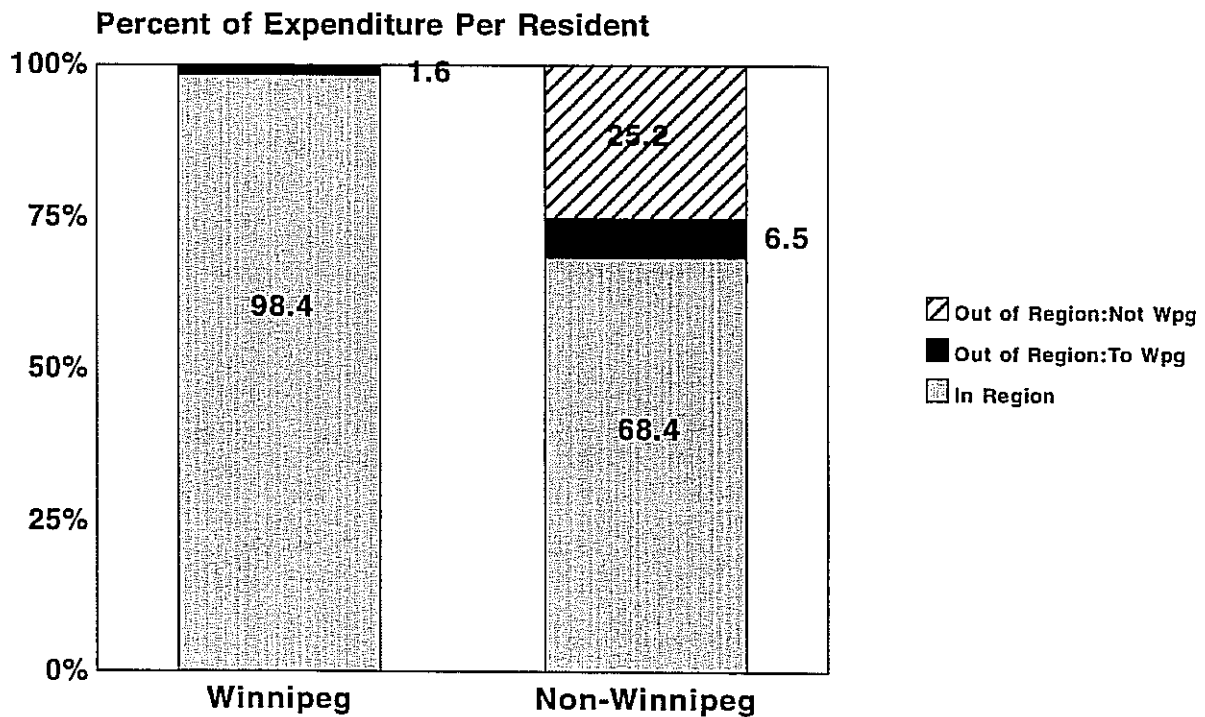
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Figure 14. Utilization by Location of Care Expenditures Per Resident



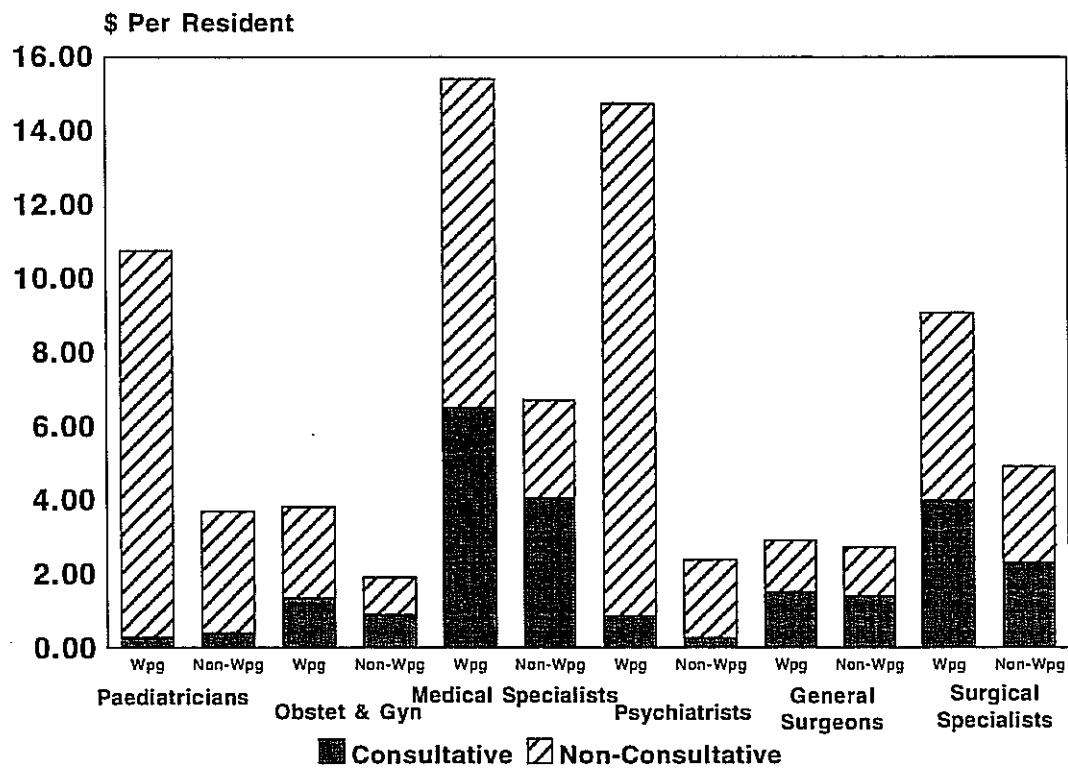
REXPWH.CH3

Percent of Expenditure Per Resident



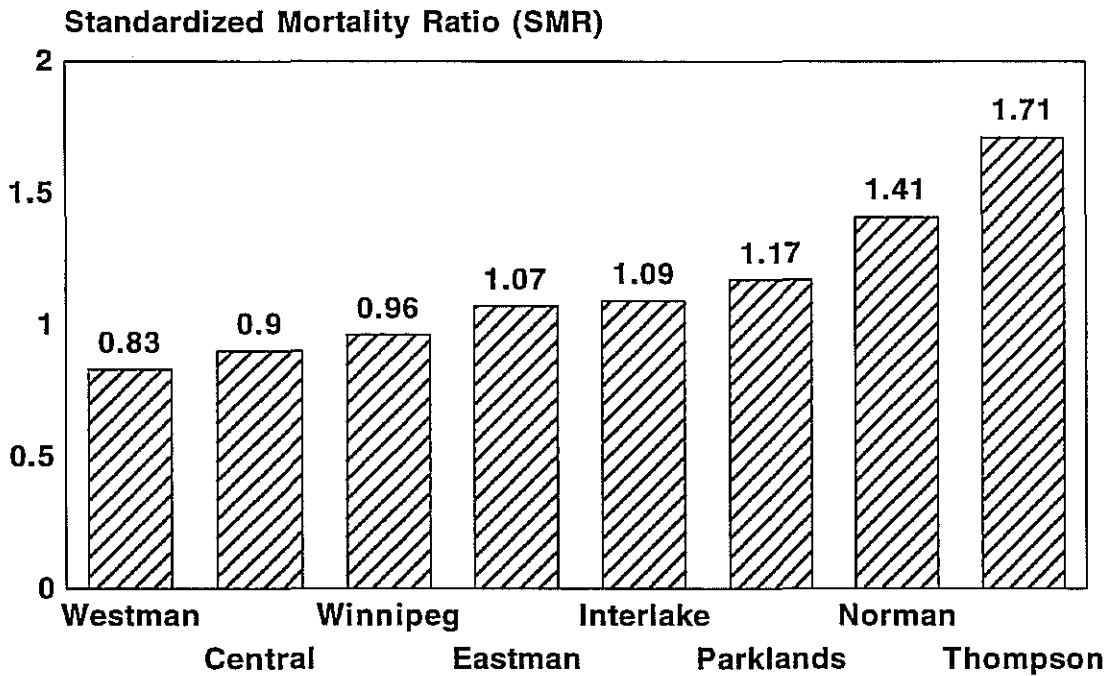
REXP%WH.CH3

Figure 15. Expenditures per Resident on Specialists by Type of Care



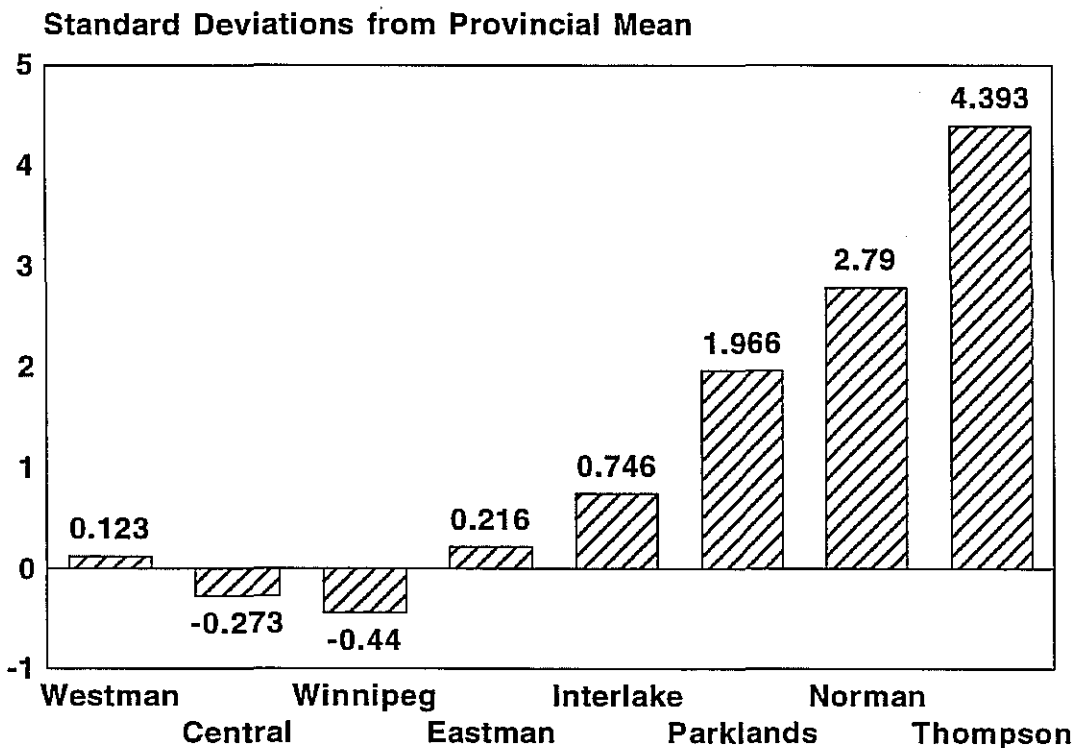
expen.ch3

Figure 16. Indicators of Need: Regional Comparisons
 Standardized Mortality Ratio (SMR)
 of Individuals Aged 0-64



SMR.ch3

Socio-Economic Risk Index



REGSCOR.ch3

Physician Supply

Winnipeg residents had the greatest supply of physicians (1.46 physicians per 1000 residents, Figure 17), followed by Westman and Norman (1.10 and 0.96 physicians per 1000 residents respectively). Outside of Winnipeg, only Westman had the services of at least some physicians in each of the specialty groups. General Surgeons were the only specialty group found in five of the seven regions outside Winnipeg.

Comparison of Crude and Adjusted Rates

Rates for Winnipeg and the Interlake, which have population structures similar to that of the province were not affected by the age- and sex-adjustment (Figure 18). The regions of Central, Westman, and Parklands had a higher proportion of elderly persons. Because the elderly use more physician resources than younger persons, in these regions the adjustment had the effect of slightly reducing the adjusted rates in comparison to the crude rates. In contrast, Eastman, Thompson and Norman had very young population structures, and adjustment-produced higher-rates than the crude rates. Thus, while Thompson residents actually had lower utilization than the other regions (as measured by crude rates), when their utilization was adjusted to remove the effects of the young population structure, Thompson residents had a utilization rate slightly higher than the non-Winnipeg average.

Overall the age- and sex-adjustment of rates had very little impact on utilization estimates and with the exception of Thompson and Parklands, all regions kept essentially the same relative rankings for both crude and adjusted rates.

Overall Patterns of Ambulatory Care

Despite the much greater availability of physicians in Winnipeg, a very high proportion of Manitobans in every region were seen by a physician at least once over the course of a year (Figure 19 and Table 8), ranging from 77.7% of Thompson residents to 85.2% of Winnipeg residents.

Residents of Winnipeg and Norman regions had the highest rate of contacting physicians over the year, making 529 and 519 visits per 100 residents respectively (Figures 19 and 20).

Residents of Westman, Interlake and Thompson had intermediate levels of contact, while residents of the Parklands, Eastman and Central regions had the lowest rate of physician contact.

Figure 17. Physician Specialist Supply

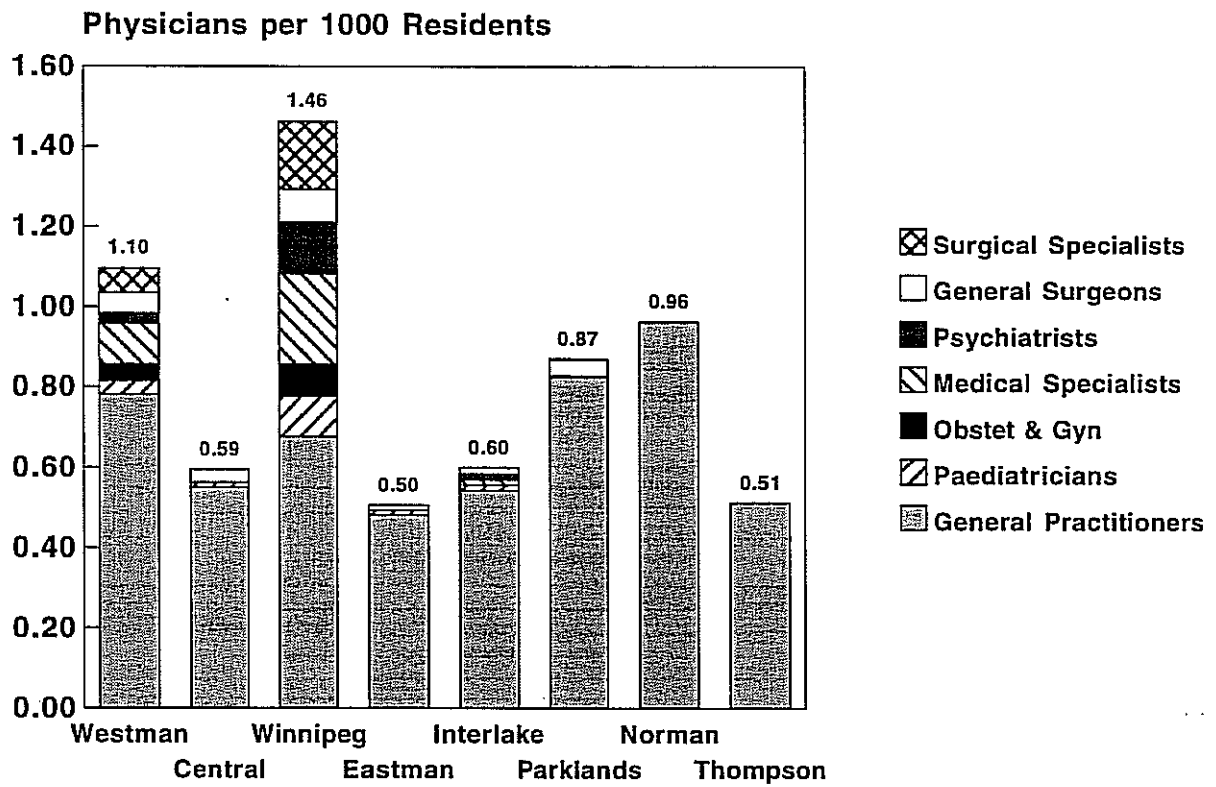
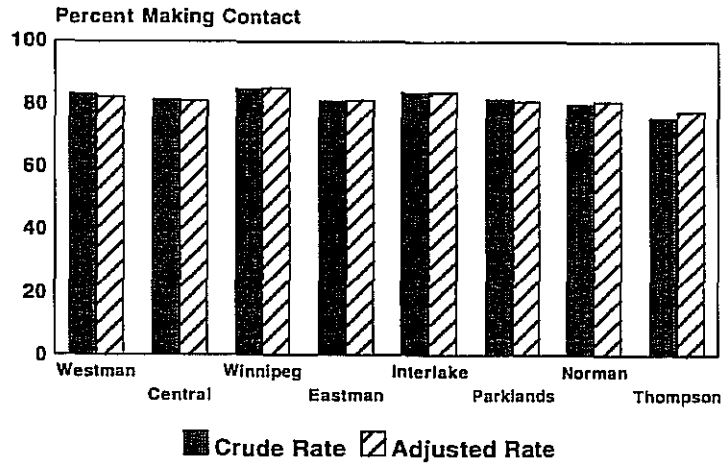
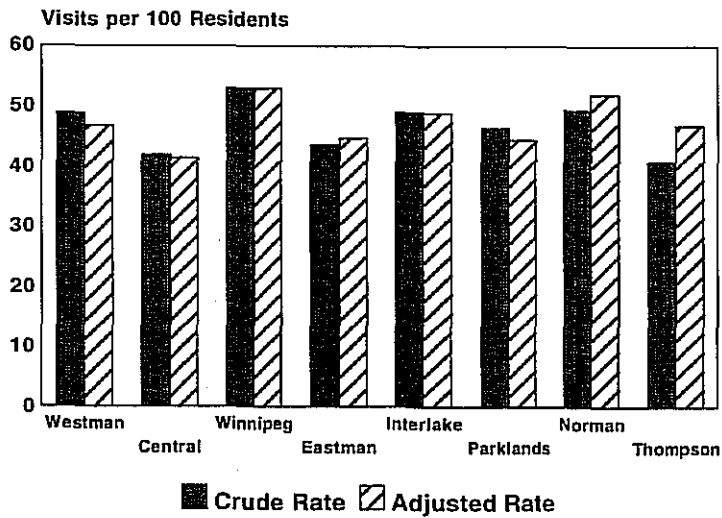


Figure 18. All Ambulatory Physician Utilization:
Crude vs. Adjusted
Access



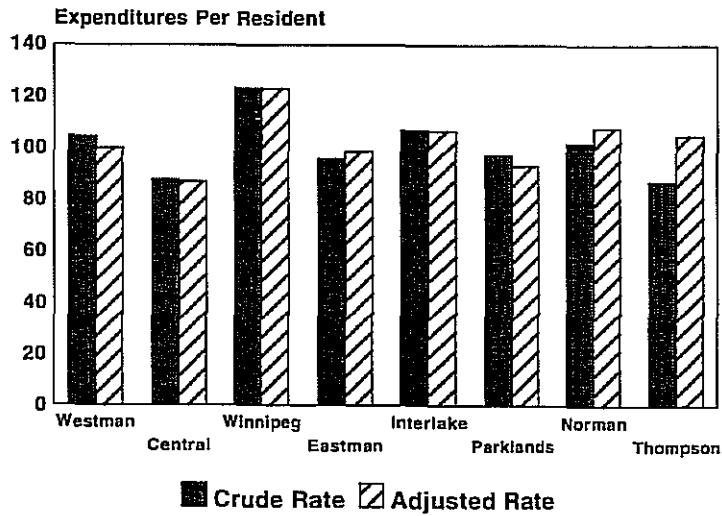
crAndaz2.ch1

Visits Per 100 Residents



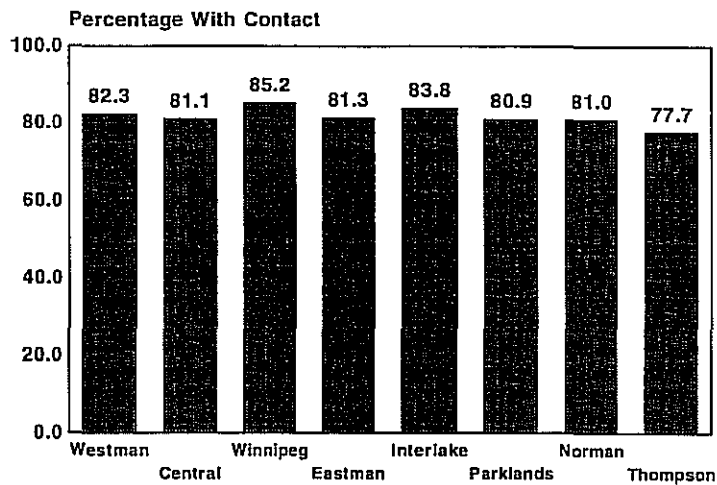
crAndv12.ch3

Expenditure Per Resident



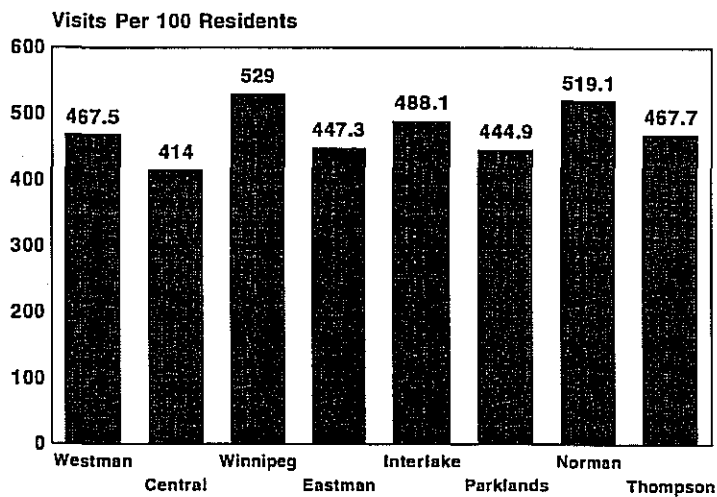
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Figure 19. All Ambulatory Physician Utilization
Percent Making Contact



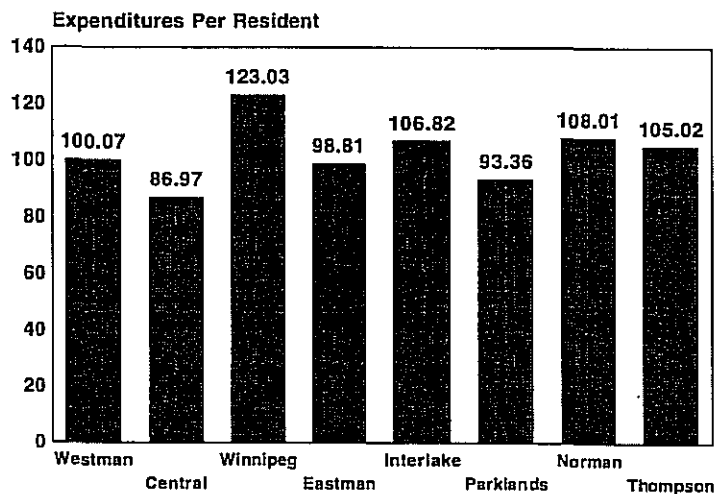
accrpt.ch3

Visits Per 100 Residents



visrpt.ch3

Expenditures Per Resident



exprpt.ch3

Key Findings: Table 8

**Utilization¹ of Ambulatory Physician Resources by Type of Care:
Comparison of Winnipeg and Non-Winnipeg Regions**

Type of Care	Westman	Central	Winnipeg	Eastman	Interlake	Parklands	Norman	Thompson	Non- Winnipeg	Manitoba	
	Number of Residents	117,774	94,474	655,118	85,152	71,929	46,038	24,956	44,965	485,288	1,140,406
Percent of residents making contact ²	Consultative ³	13.3	11.8	19.1	15.3	16.2	11.4	13.4	16.1	13.9	16.9
	Non-Consultative ³	82.2	80.9	85.0	81.1	83.6	80.8	80.7	77.3	81.2	83.3
	Any	82.4	81.1	85.2	81.3	83.8	80.9	81.0	77.7	81.4	83.6
Number of visits per 100 residents	Consultative ³	16.5	14.8	25.6	19.7	21.1	14.2	17.6	21.4	17.6	22.2
	Non-Consultative ³	450.9	399.2	503.4	427.6	467.0	430.8	501.5	446.3	438.8	475.6
	Any	467.4	414.0	529.0	447.3	488.1	445.0	519.1	467.7	456.4	497.8
Expenditures per resident	Consultative ³	9.98	8.52	14.91	11.31	11.98	8.19	9.48	11.86	10.15	12.91
	Non-Consultative ³	90.10	78.46	108.12	87.50	94.84	85.17	98.53	93.16	87.77	99.55
	Any	100.08	86.98	123.03	98.81	106.82	93.36	108.01	105.02	97.92	112.46

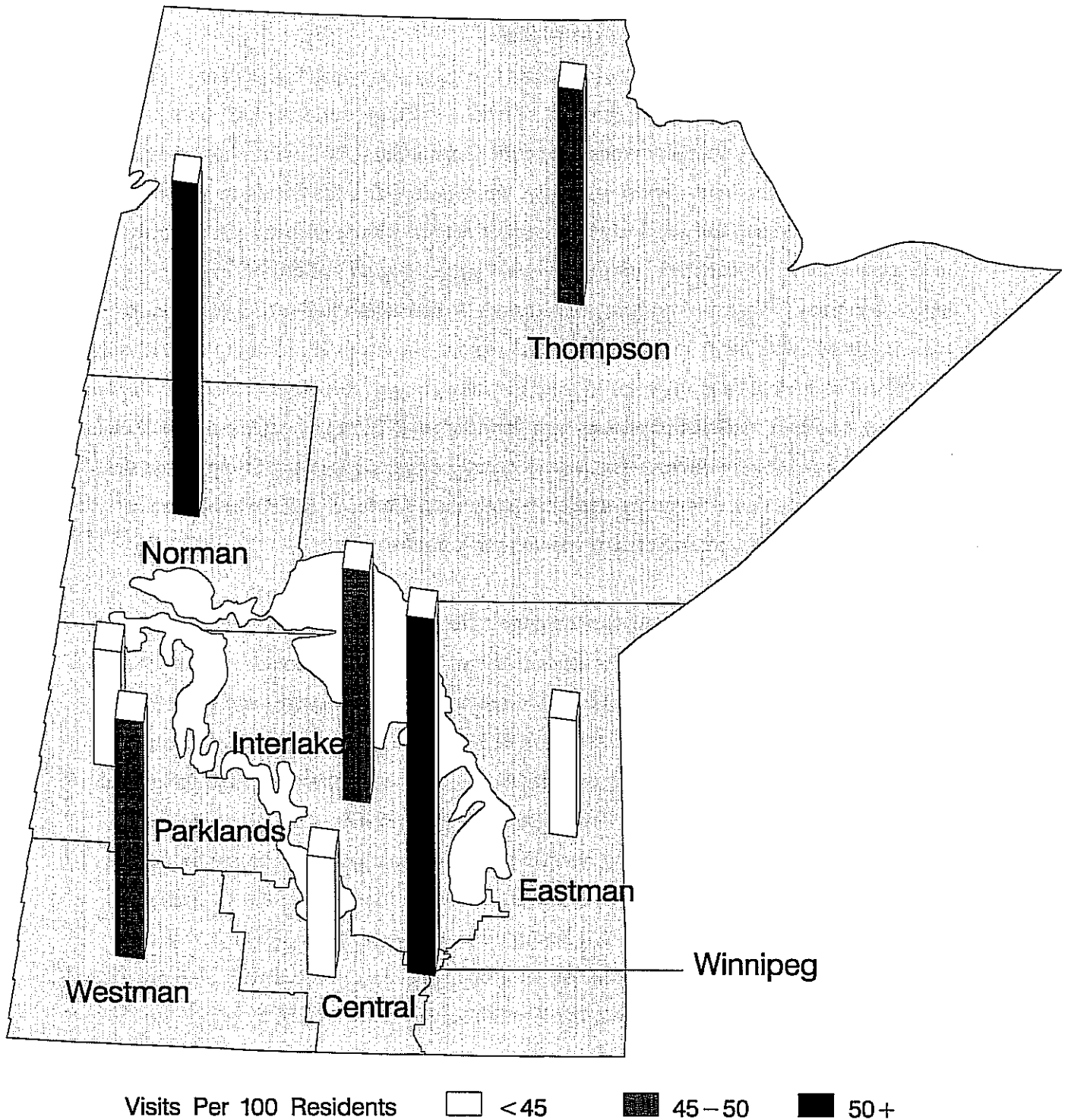
¹All rates have been age- and sex-adjusted using Manitoba population proportions and the direct method of adjustment.

²The rate of persons making contact with a physician is a useful indicator of the ability of people to receive physician services and is therefore relevant for comparisons of access.

³As defined by Manitoba Health Physician manual, 1990 (also see Methods section).

Figure 20

Ambulatory Physician Utilization:
Number of Visits per 100 Residents



Visits Per 100 Residents

□ <45

▨ 45-50

■ 50+

Magnitudes are 1, 2, or 3, not indication of actual values

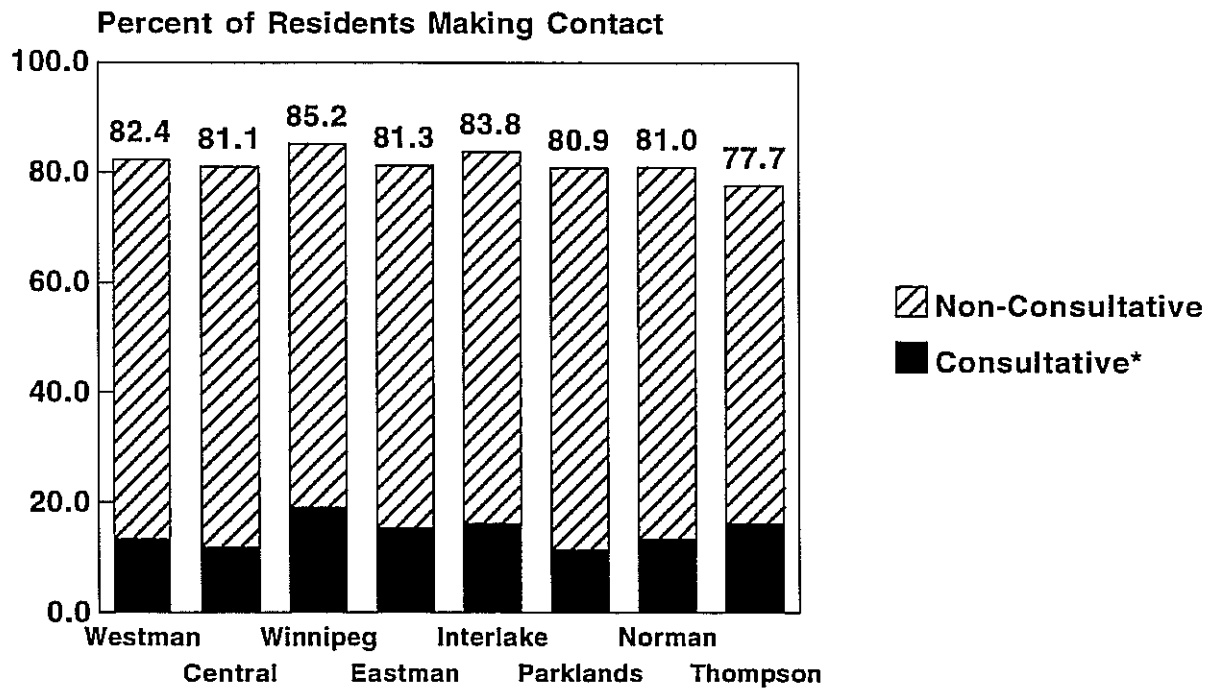
Expenditure patterns across the regions closely track visit patterns, except for Winnipeg residents where expenditures were higher than would be expected by the visit pattern alone. While Norman and Winnipeg residents access physicians at a similar rate, the province spent \$15.02 more per Winnipeg resident for such contacts - since they were somewhat more likely to be consultations (Table 8 and Figure 21) and much more likely to be to specialists rather than to general practitioners. (See section: Visits and Expenditures by Physician Speciality).

Access to Physician Specialists by Type of Care

Figure 22 illustrates the proportion of residents in each region which had contact with each of the specialty groups across the regions in 1991-92. Winnipeg residents had, by far, the greatest access to every specialty group except for General Surgeons - with whom they had the third highest access rate. Not surprisingly, the regions which are closest to Winnipeg (Eastman and Interlake) had relatively high rates of contact with specialists. Their access to medical specialists, psychiatrists, obstetricians and gynaecologists and other surgeons was higher than that of Westman residents, even though Westman also had such specialists in-region. On the other hand, residents of Central region - despite their proximity to Winnipeg - showed relatively low rates of access to most specialty groups. Residents of Norman showed the lowest access to specialist physicians with Parklands and Thompson residents also showing low rates of access to specialists. The least frequently contacted specialty group across the province is psychiatrists. For every specialist group there are fewer differences in access across the regions for consultative care than for non-consultative care.

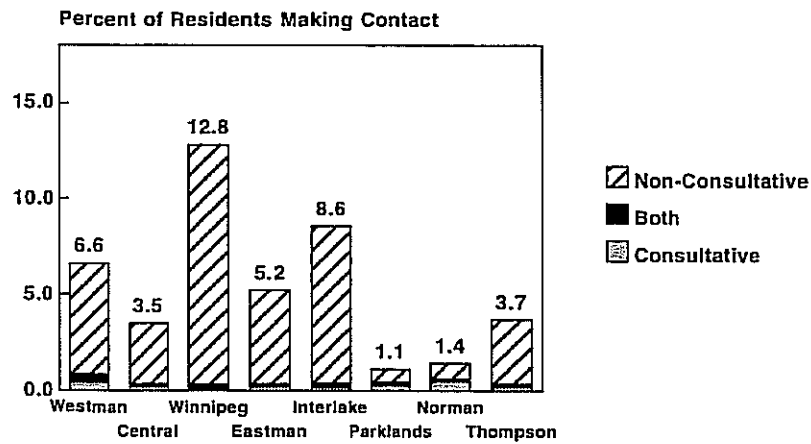
Patterns of access to general surgeons were quite different from patterns of access to other specialists. Westman, Central and Parklands residents who have less access to most other specialties had high rates of access to general surgeons, no doubt because, as Figure 17 shows, there are general surgeons practising in each of these regions. Winnipeg's ample supply of "other surgeons" (including orthopaedic, urology, etc.) offsets its need for general surgeons. The very important ability of less specialized physicians to substitute for more specialized physicians is illustrated by Norman residents' apparently poor access to general surgeons - the lowest in the province. However, as seen in Figure 21 of the Utilization of Hospital Resources module of the PHIS, Norman residents experienced the highest rate of surgical care in the province (74 operations per 1,000 residents compared with 58.3 per 1,000 for Winnipeg residents). In the North, much of the surgery is performed by physicians registered as General Practitioners.

Figure 21. Percent Making Contact
by Type of Care



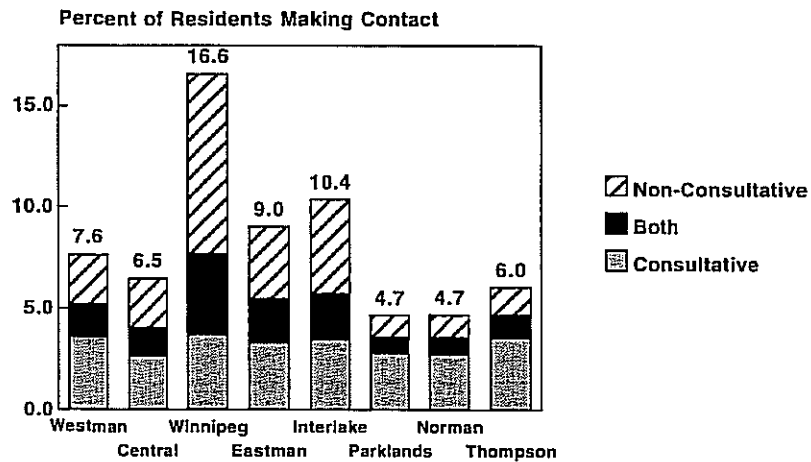
* Individuals classified as having a consultation
include those who also had non-consultative visits

Figure 22. Percent Making Contact with Specialists by Type of Care Paediatricians



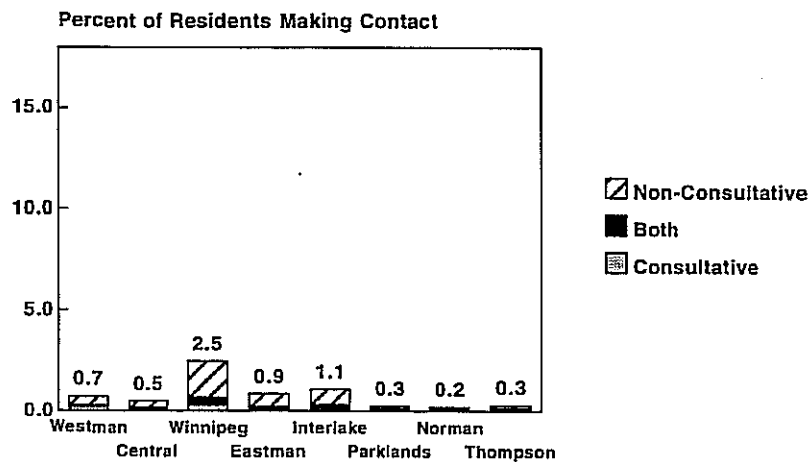
paediat.ch3

Medical Specialists



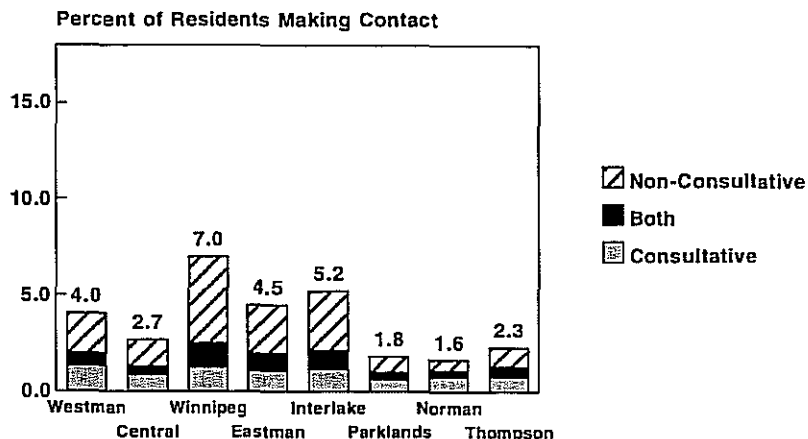
medic.ch3

Psychiatrists



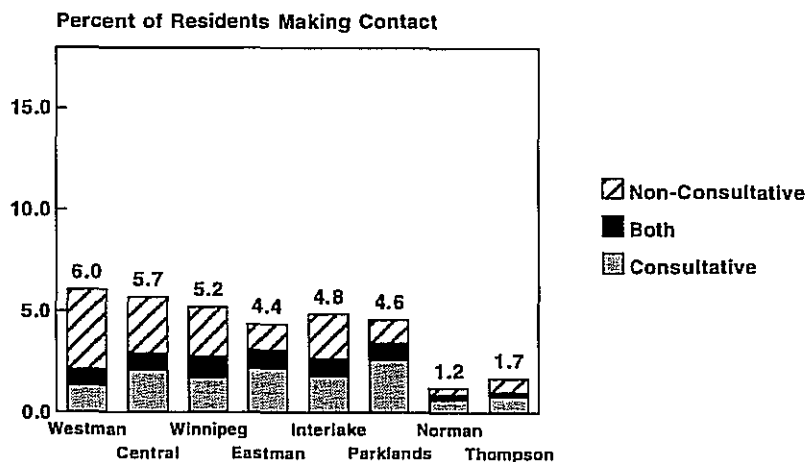
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Figure 22.(cont'd) Percent Making Contact with Specialists by Type of Care
Obstetricians and Gynecologists



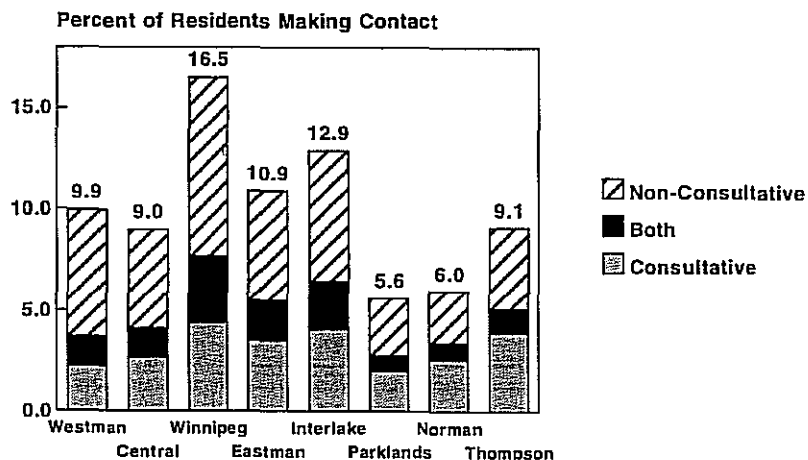
oba4gyn.ch3

General Surgeons



gen-surg.ch3

Surgical Specialists



oth-surg.ch3

Visits and Expenditures by Visit Intensity Group

Individuals making 1-7 visits account for a remarkably similar rate of visits and expenditures across every region of the province (Figure 23). Regions such as Winnipeg, and Norman, whose residents have higher rates of visits and on whom the province spends more per capita, show the biggest impact of the high usage groups.

Visits and Expenditures by Physician Specialty

In every region including Winnipeg, the greatest proportion of visits and expenditures was made to general practitioners (Figure 24). Medical specialists accounted for the next greatest proportion of expenditures. Where paediatricians were available (Central, Eastman, Interlake, and Westman, as well as Winnipeg) they delivered a significant proportion of primary care to children. Similarly, where general surgeons (all regions but Norman and Thompson) were available, they accounted for a significant proportion of expenditures for ambulatory surgical contacts.

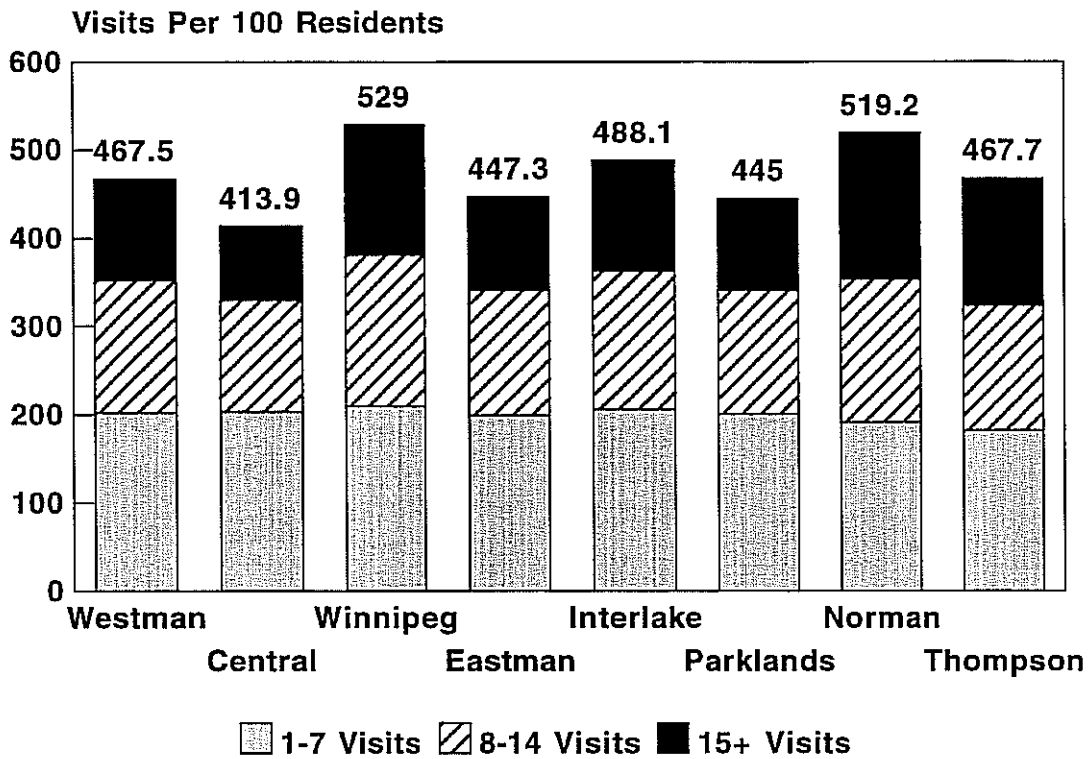
In general, Parklands, Norman and Thompson made little use of specialist services, while utilization by residents in Interlake, Eastman, and Westman was higher, although still less than that of Winnipeg residents.

Visits and Expenditures by Location of Care

Residents of Winnipeg, Westman, Parklands, and Norman regions made almost all their contacts with physicians in their home region (Figure 25). Residents of the three regions which border on Winnipeg (Interlake, Eastman, and to a lesser extent, Central), made frequent contact with Winnipeg physicians. Thompson residents obtained almost half of their physician services out of region - making frequent contact with Winnipeg physicians and also with physicians in other regions - mainly Norman¹⁶. Since contacts made with Winnipeg physicians tend to be with specialists or as consultations, the proportion of expenditures on Winnipeg physicians was somewhat higher than the proportion of visits.

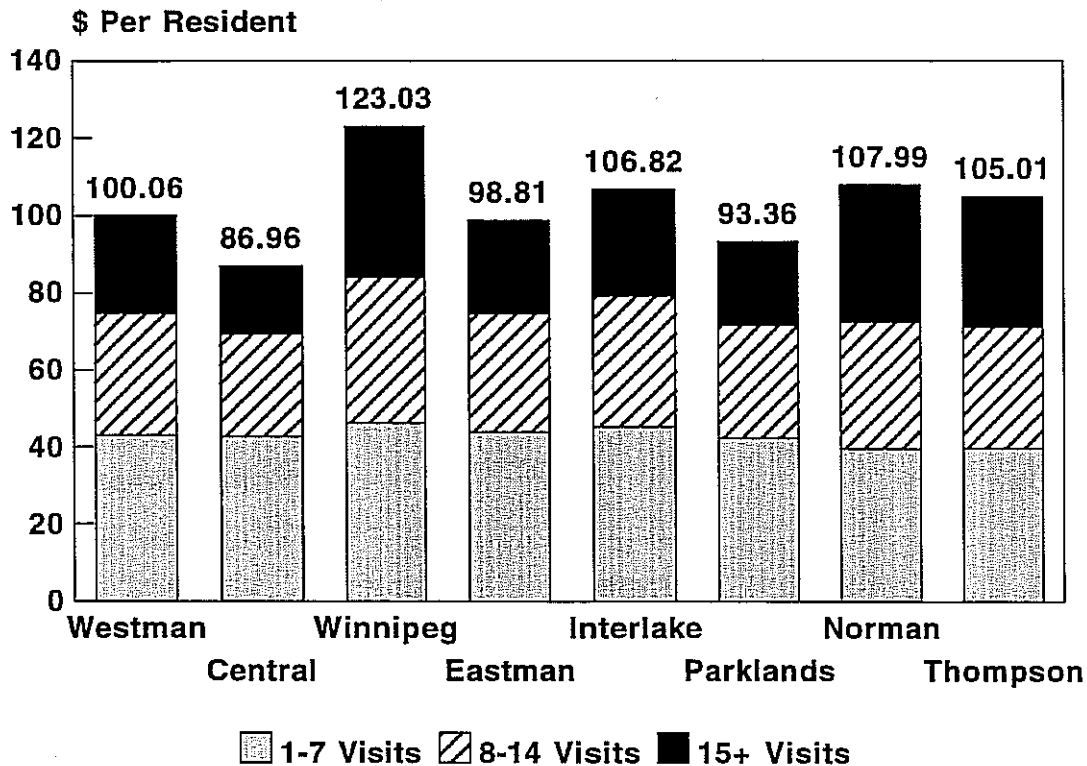
¹⁶ This was determined through analyses not reported in this document. As was mentioned in the methods section, some part of the visits counted in Figure 25 as being out of region will actually have occurred when a physician (usually from Winnipeg) travelled to another region to provide care.

Figure 23. Utilization by Visit Intensity Group
Visits per 100 Residents



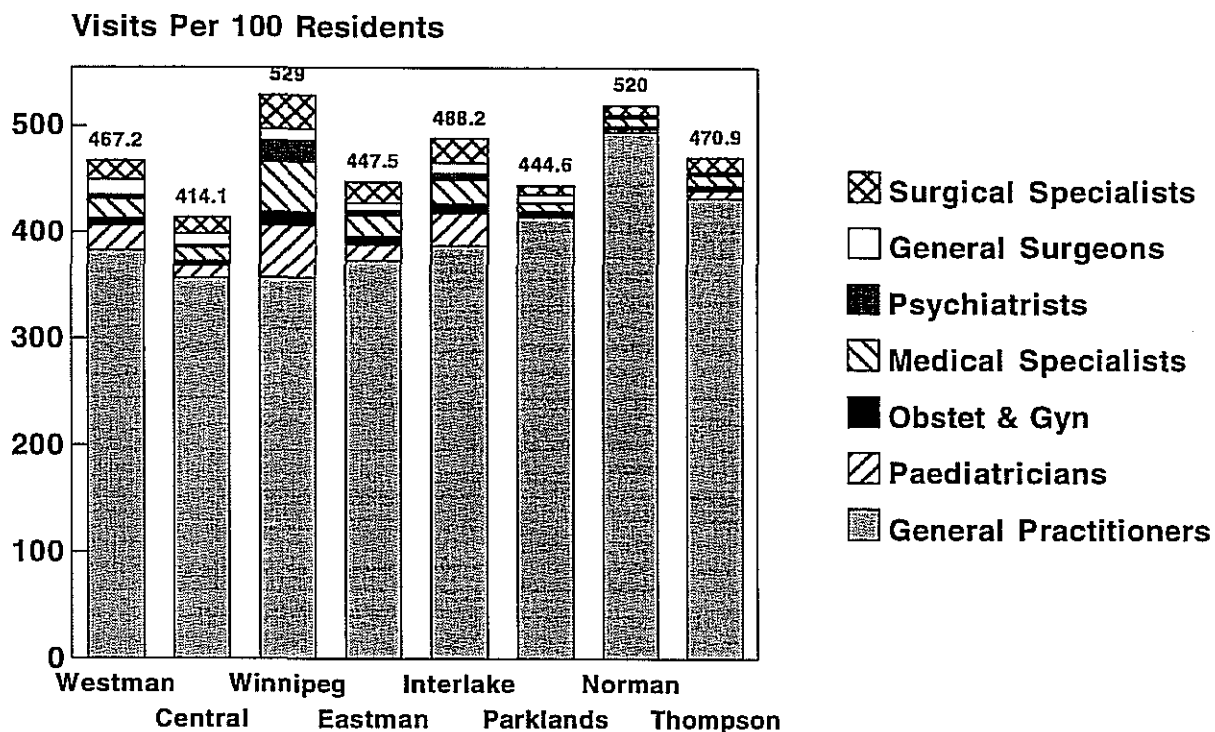
visuse.ch3

Expenditures Per Resident



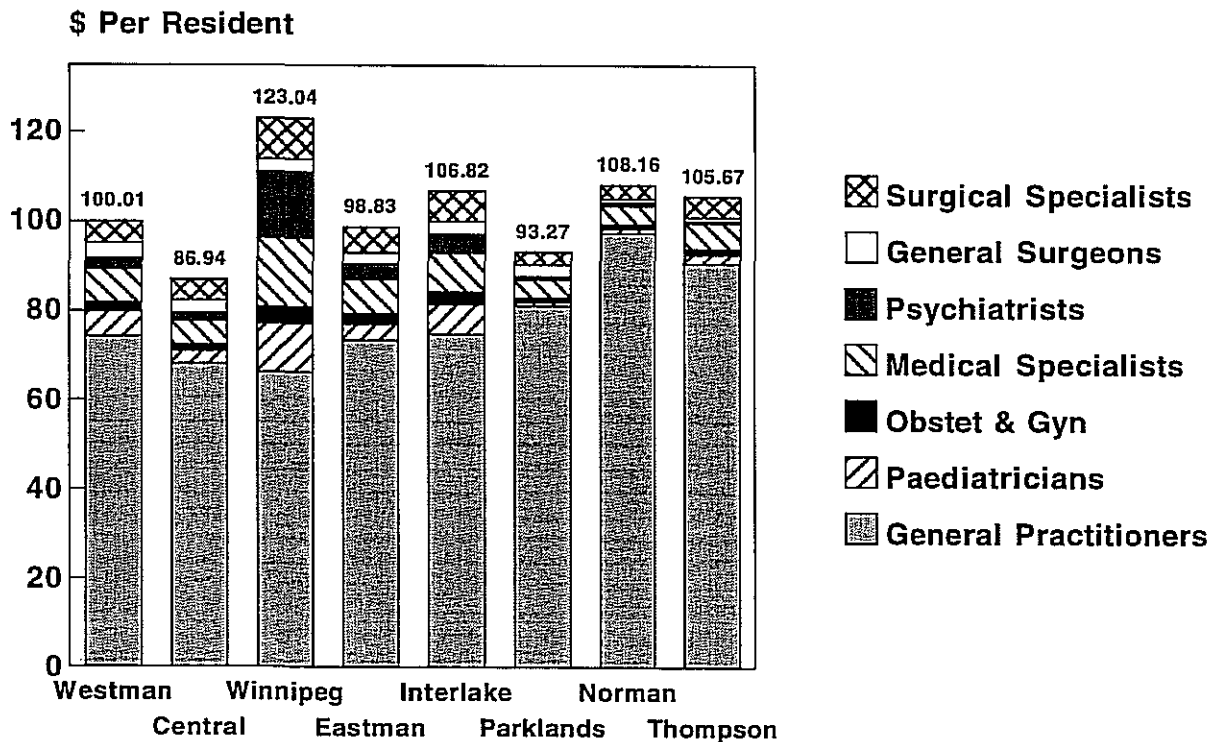
expend2.ch3

Figure 24. Utilization by Physician Specialty
Visits Per 100 Residents



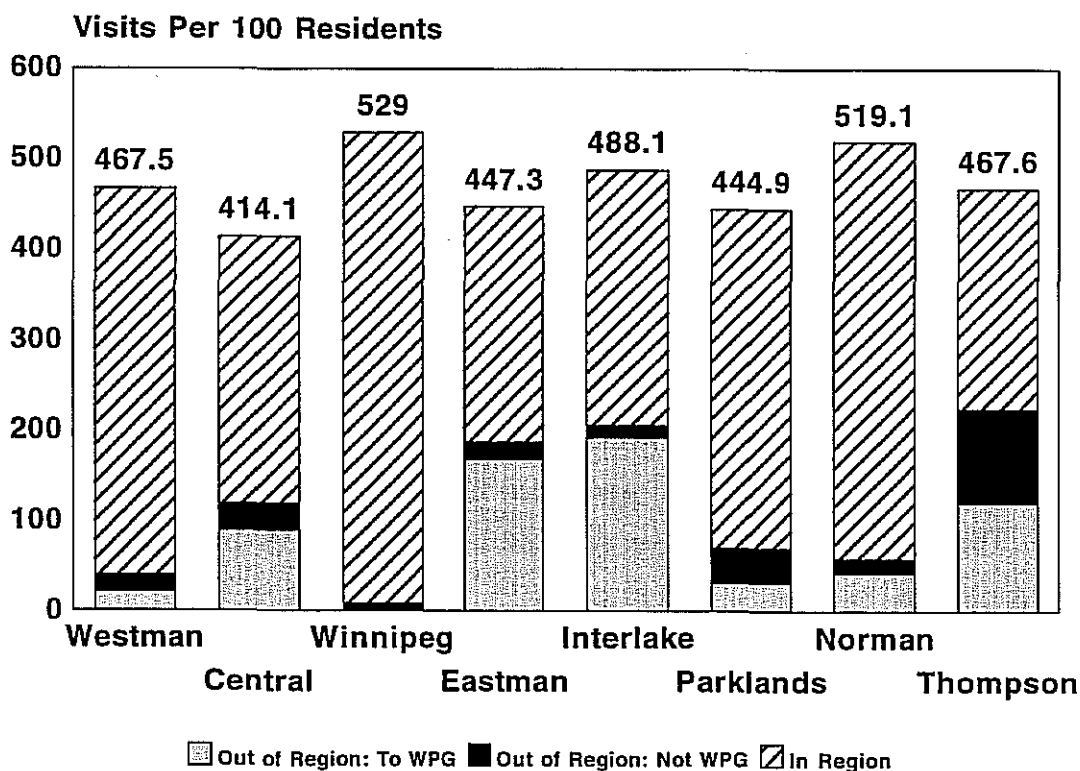
visits2.ch3

Expenditures Per Resident



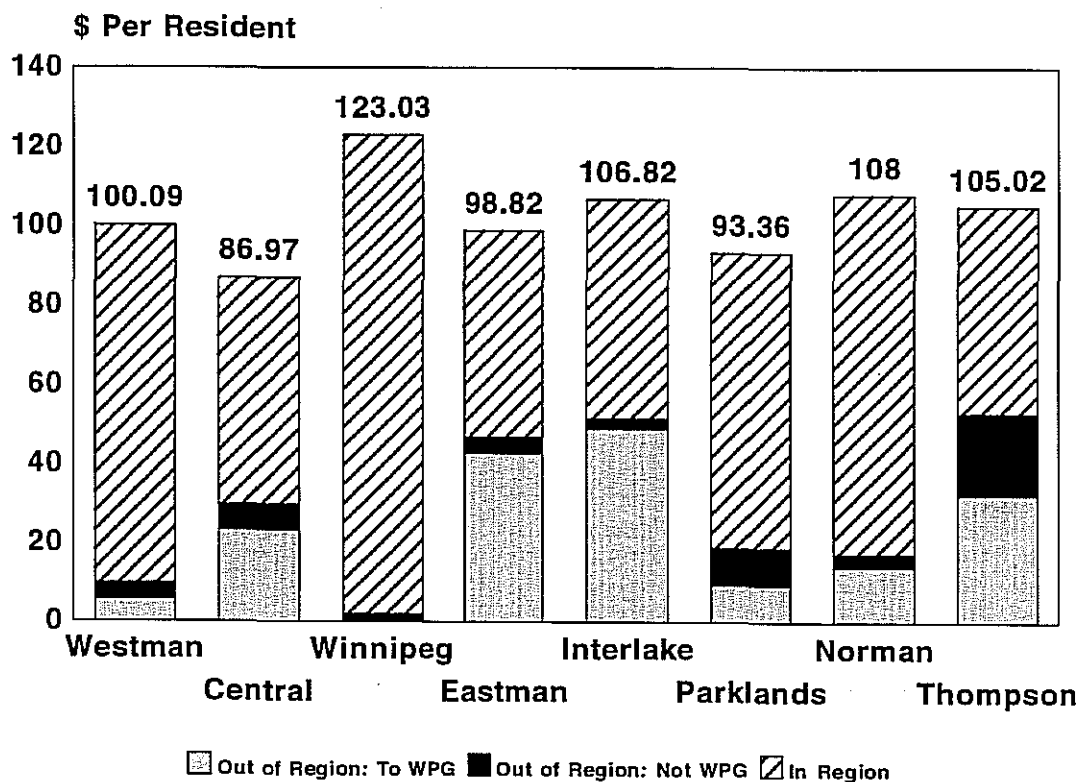
expend.ch3

Figure 25. Utilization by Location of Care
Visits per 100 Residents



where.ch3

Expenditures Per Resident



where2.ch3

Need and Physician Utilization

Unlike the hospital utilization module (Black, Roos, and Burchill, 1994) which showed a relationship between need for health care and hospital utilization, no clear relationship was found between physician use and our measures of need. For example, Figure 19 indicates that while residents of Thompson and Norman have the highest assessed need (i.e., both are at the extreme right of the graph), Norman residents have relatively high rates of physician visits and Thompson residents have intermediate rates. In contrast, residents of Central and Winnipeg regions are assessed as having similar need, but Central residents have the lowest physician contact rates in Manitoba and Winnipeg residents the highest. It is not clear if the consistent lack of relationship between our measure of need and physician utilization indicates that physician utilization is simply driven by factors other than need, or if it reflects a problem at another level, such as with the measurement of need or the degree of data aggregation. The relationship found between need and the hospital module mitigate against these latter conclusions.

Discussion

A comprehensive review of physician services provided to Manitobans in 1991-92 has been provided. The data used are of high quality and do not rely upon small samples or the memory of individuals, problems facing similar studies derived from interview data. The under-reporting of salaried physician contacts is low. In analyses not presented here-however, we determined that their inclusion would only serve to accentuate the differences between Winnipeg and non-Winnipeg residents use of physician services, not lessen them. A reviewer of an earlier draft suggested that excluding visits to hospitalized patients may be biasing the results. Since we know non-Winnipeg residents make higher use of hospitals for acute stays (Black et al, 1994), perhaps their in-hospital contact rate with physicians is also higher than that of Winnipeg residents, thus reducing the differences. Although not included in the body of the report, we also analyzed in-patient visits - they accentuate the differences: Winnipeg residents accrue 10% more visits and incur 22% more expenses than do non-Winnipeg residents, on in-hospital physician care.

This module of the Population Health Information System is designed to describe patterns of physician service use and expenditures by Manitoba residents, and is not intended to explain the different patterns. Premature conclusions should not be drawn. The patterns described here raise many questions that require further study.

Specifically, these data raise legitimate questions about the appropriate allocation of physician resources in a small province. What is an appropriate level and mix of physician supply? How are patterns of use of physician services related to use of hospital care? What are the relative benefits of the different physician use characterizing Winnipeg and non-Winnipeg residents? Are there benefits from the care provided to Winnipeg residents by a rich supply of physicians and specialists? Winnipeg residents spend less time in hospital for acute illness than do residents of other regions - do paediatricians, psychiatrists and medical specialists deliver a more intensive service which substitutes for or curtails hospital admissions, or are simply fewer beds available in Winnipeg and therefore the system adapts independently of physician supply? Who are the individuals that incur 15 or more visits a year? What is the nature of their medical conditions and their care? What kind of benefits are accrued by this high intensity of use? Nothing in this report suggests these intensive usage patterns are inappropriate. Some of this usage will be to frail elderly patients in nursing homes, some as

psychotherapy, but because such a small group accounts for such a high proportion of expenditures, further analysis will be useful. Clearly, the report raises important questions that have implications for planning future physician and hospital resources. Further research will be required to address such issues.

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