Centre for
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Planning for Renewal

Mapping Primary Health Care in British Columbia

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About CHSPR

The Centre for Health Services and Policy Research (CHSPR) is an independent research centre based at the University of British Columbia. CHSPR's mission is to stimulate scientific enquiry into issues of health in population groups, and ways in which health services can best be organized, funded and delivered. Our researchers carry out a diverse program of applied health services and population health research under this agenda.

CHSPR aims to contribute to the improvement of population health by ensuring our research is relevant to contemporary health policy concerns and by working closely with decision makers to actively translate research findings into policy options. Our researchers are active participants in many policy-making forums and provide advice and assistance to both government and non-government organizations in British Columbia (BC), Canada and abroad.

CHSPR receives core funding from the BC Ministry of Health Services to support research with a direct role in informing policy decision-making and evaluating health care reform, and to enable the ongoing development of the BC Linked Health Database. Our researchers are also funded by competitive external grants from provincial, national and international funding agencies.

Much of CHSPR's research is made possible through the BC Linked Health Database, a valuable resource of data relating to the encounters of BC residents with various health care and other systems in the province. These data are used in an anonymized form for applied health services and population health research deemed to be in the public interest.

CHSPR has developed strict policies and procedures to protect the confidentiality and security of these data holdings and fully complies with all legislative acts governing the protection and use of sensitive information. CHSPR has over 30 years of experience in handling data from the BC Ministry of Health and other professional bodies, and acts as the access point for researchers wishing to use these data for research in the public interest.

For more information about CHSPR, please visit www.chspr.ubc.ca.

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This report relies primarily on information derived from other organizations. All analysis and interpretation, and any errors, are the sole responsibility of the authors.

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Executive Summary

Primary health care (PHC) is the foundation of Canada's health care system. For most people, PHC is their first point of contact with the health care system, often through a family physician. It is where short-term health issues are resolved and the majority of chronic health conditions are managed. It is also where health promotion and education efforts are undertaken, and where patients in need of more specialized services are linked to secondary care.

Over the last decade, there has been a significant focus on transforming the delivery of PHC in Canada. In British Columbia, the government has committed to investing at least \$74 million between 2002 and 2006 to “strengthen family practice and reduce pressure on the acute care system; improve health care delivery and health outcomes; and provide patients with a wider range of options for accessing services at the local level.”

In September 2003, British Columbia's Ministry of Health Services contracted with CHSPR to build capacity to conduct province-wide, system-level performance measurement and evaluation research about PHC. This is the second report in this three-year research program and was developed in response to the urgent need for information relevant to planning for PHC renewal. This document contains selected profiles only; the full collection of profiles, data tables and additional appendices are available on our website (www.primary-care.chspr.ubc.ca) and the included CD.

The goal of this project was to quickly compile a snapshot of the PHC system in British Columbia—and the health of its users—to inform policy and planning for the renewal of this sector. We created a set of profiles to reflect different facets of the PHC system, drawing primarily on information from readily available sources, but also conducting some important new analytic work. Each indicator, or profile, was mapped to advance our understanding of geographic variation and distribution across the province's six health authorities, 16 health service delivery areas, and 89 local health areas, and presented in a way to illustrate the relationship between health

status and PHC services use. Accompanying data tables (website/CD only) provide supplemental information.

As a collection, the profiles contained in this report will enable health system planners to better understand demographic, socioeconomic and health profiles of the population; temporal changes in population size; the level of supply and geographic distribution of PHC providers; patterns of delivery and use of PHC services; and the responsiveness of these services to variations in the distribution of health status.

This report illuminates the many challenges for planning PHC renewal in the province. For example, there is tremendous diversity in the contexts in which the PHC system operates:

- Diversity in demographic structure, population health status and socioeconomic conditions across regions in the province require that services be tailored to meet local needs.
- Variations in population density have direct implications for planning and managing requirements for dispersion in supply of PHC services.
- Historic patterns and future projections of population growth necessitate temporal shifts in the supply of PHC services.

There are substantial financial and human resource investments in PHC:

- British Columbians spent roughly \$665 million in 2000/01 (\$164 per capita) on general practice services.
- An estimated 3,558 full-time equivalent general practice providers, the majority of whom are physicians engaging in general practice, serviced British Columbia in 2000/01. Supply varied across local health areas, with an average of 8.7 general practice providers for every 10,000 people.
- British Columbia had approximately 94 nurses for every 10,000 people in 2000. There was no readily available information on the count or location of

nurses who provide PHC services; CHSPR is planning future work in this area.

There is much to learn about the patterns of use and delivery of PHC services:

- Eighty-four per cent of British Columbians received general practice services in either their own or adjacent local health areas in 2001/02.
- British Columbians made approximately 964,187 visits to emergency rooms in 1999, a rate of 275 visits for every 1,000 people. This is likely to be an underestimate because of limited data sources.
- British Columbians received approximately 218 home visits for every 1,000 people from publicly funded nurses, physiotherapists or occupational therapists in 2001/02.
- British Columbians used approximately 1,764 hours of publicly funded home support services for every 1,000 people in 2001/02.
- Physicians identified approximately 4.74% of British Columbians as diabetic in 2001/02. The proportion of diagnosed diabetics that received recommended clinical services varied by the type of service and across health regions.
- Physicians identified approximately 1.66% of British Columbians with congestive heart failure in 2001/02. The proportion of people with diagnosed congestive heart failure that received recommended clinical treatments varied by the type of intervention and across health regions.

As identified in *A Results-Based Logic Model for Primary Health Care*, primary health care is responsible for a number of different outcomes. Immediate (or direct) outcomes are those for which this sector is most responsible, and include maintaining or improving the work life of the PHC workforce; increasing knowledge about health and health care among the population; reducing the risk, duration and effects of acute and episodic conditions; and, reducing the risks and effects of continuing health conditions. Primary health care has a lesser degree

of influence over intermediate and final outcomes. Intermediate outcomes include acceptability with health care, appropriateness of place and provider, health care system efficiency, and health system equity. Final outcomes include a sustainable health care system; improvement and/or maintenance of functioning, resilience and health for individuals; and improvement in the level and distribution of population health status.

One of the foremost expectations Canadians hold of their health system is that care will be delivered to those most in need. Equity simply reflects the effectiveness of the health system in distributing services to populations on the basis of need. The PHC sector contributes to health system equity directly through its responsibility for equitable distribution of care within the sector, and indirectly through its control over referrals and hospital admissions. In this report, we take a first glimpse at the level of equity of British Columbia's PHC system by looking more closely at the association between population health status, or need for health care (as measured by premature mortality rate), and a number of key PHC profiles.

The degree of equity in the allocation of PHC services seems to depend on the type of services in question. While expenditures on general practice services appear to be equitably distributed across local health areas, use of emergency rooms and home-based care do not appear to be associated with population health status.

Importantly, our analyses suggest that general practice services, home-based care and emergency room utilization work in synchrony to respond to the needs of local health areas with varying population health status. When combined, expenditures on this collection of PHC services reflecting different types of care—general practice, emergency rooms and home-based care—show a strong association with population health status. This indicates that PHC needs may be met by relying on different mixes of PHC services, depending on, for example, underlying population health status, demographic structure, and regional variation in supply of different types of services.

In planning for PHC renewal, these analyses highlight the critical importance of looking at multiple facets of the PHC system when making assessments of allocation equity, and shed light on local variability in need for care, supply of services, access and utilization. Our report also points to the absolute requirement for comprehensive data: we were, for example, able to fully detail expenditures on general practice services using multiple funding sources, a methodological advance with particular significance for further PHC research in BC.

This report contributes a few small, though important, pieces of the PHC puzzle and provides an important starting point for planning for PHC renewal. We have provided a first glance at the supply and utilization of PHC services, and the level of equity in the distribution of PHC resources across the province. However, there is still much to learn about the health of British Columbians and the many facets of their PHC system, and much work to be done to improve the administrative data infrastructure in British Columbia—particularly in relation to data from alternative funding sources—for PHC planning and evaluation. CHSPR is committed to this agenda and looks forward to developing a comprehensive picture of the attributes and qualities of the PHC system in British Columbia as we progress through our research program.

Chapter 1: Introduction

Primary health care (PHC) is the foundation of Canada's health care system. For most people, it is the first point of contact with the health care system, often through a family physician. It is also where patients in need of more specialized services are linked to secondary care.

PHC is where short-term health issues are resolved and the majority of chronic health conditions are managed. It is also where health promotion and education efforts are undertaken. Physicians, dietitians, home care workers, nurses, occupational therapists, physiotherapists, pharmacists, social workers, and other health care workers all deliver PHC services.

Canadians care about their health and take great pride in their health care system. We have come to expect convenient access to high quality health services based on need. Although most Canadians (70%) are satisfied with the quality of health care, fewer are content with current access to care in the community.¹ In British Columbia (BC), 12% of residents report difficulties accessing first contact care.² But despite reporting an erosion in overall confidence in their health care system, Canadians remain open to a wide variety of initiatives to improve the current situation, and strongly support the notion that research will contribute to the pace of innovation in health care and evidence-based decision-making.³

Over the last decade, there has been a significant focus on transforming the delivery of PHC in Canada. Federal and provincial governments have made considerable investments toward PHC renewal through the Health Transition Fund (1997), the Primary Health Care Transition Fund (2000), and the First Ministers' Accord on Health Care Renewal (2003). Between 1997 and 2003, federal investments designed to stimulate change and support evaluative research in this sector exceeded \$1 billion.

In British Columbia, the government has committed to investing at least \$74 million between 2002 and 2006 to "strengthen family practice and reduce pressure on the acute care system; improve health care delivery and

health outcomes; and provide patients with a wider range of options for accessing services at the local level."⁴ The province's plan for PHC renewal is based upon a strategic partnership with BC's regional health authorities, which will receive the majority of this funding to help accelerate and expand sustainable PHC initiatives to respond to local challenges. The remaining portion of this funding is being used to support province- and system-wide initiatives.

In September 2003, the BC Ministry of Health Services contracted with CHSPR to build capacity to conduct province-wide, system-level performance measurement and evaluation research about PHC. This three-year research program will produce a results-based logic model to guide the development of a PHC information system (released September 2004); develop a PHC administrative data-based system enabling temporal, geographic, provider-based, and population-based analyses; provide advice to inform PHC data collection at provincial and health authority levels; and deliver timely information and insights on the state of PHC in British Columbia to provincial stakeholders.

This is the second report in this research program and was developed in response to the urgent need for information relevant to planning for PHC renewal. In 2005, we will release additional reports describing patterns of population morbidity, and the delivery and use of PHC services across the province. While this report contributes a few small, though important, pieces of the PHC puzzle, as we continue our research it will become increasingly possible to develop a comprehensive picture of the attributes and qualities of the PHC system in British Columbia.

Chapter 2: About this report

This is the second report in CHSPR’s three-year PHC research program. The goal of this project was to quickly compile a snapshot of the PHC system in British Columbia—and the health of its users—to inform policy and planning for the renewal of this sector. We drew primarily on information from readily available sources, but also conducted some important new analytic work to provide a first glance at the patterns of delivery and responsiveness of PHC services. Each indicator, or profile, was mapped to advance our understanding of geographic variation and distribution, and presented in a way to illustrate the relationship between health status and PHC services use.

Logic model framework

As part of our overall PHC research program, we have developed a **results-based logic model**⁵ for primary health care that describes the contexts, inputs, activities, outputs and outcomes of this sector. A logic model identifies the linkages between the activities of a policy, program or initiative and the achievement of its outcomes. Our model was designed using the Treasury Board of Canada framework,⁶ policy analysis, research evidence, and broad consultation. It is intended to guide the development of a PHC information system for the province, and aims to focus and unify evaluative efforts by enabling diverse stakeholders to work from a shared conceptual foundation and lexicon.

We have used the logic model in structuring this report to establish a solid base for the overall research program. The profiles presented here are grouped into PHC contexts, inputs, outputs, and outcomes. PHC **contexts** include population characteristics and contextual factors that can influence external outcomes. PHC **inputs** include the fiscal, material and human resources necessary to carry out activities. PHC **activities** are the primary link in the chain through which outcomes are achieved, and can be categorized into policy/governance, management and clinical activities and decisions. PHC **outputs** include health promotion, preventive, screening, curative, rehabilitative, palliative and supportive services to target groups or populations. PHC **outcomes** can be immediate, intermediate or final, and collectively represent “results

for British Columbians.” A more detailed discussion of each category of profiles is provided throughout the report.

Premature mortality rate framework

A second feature of this report is the use of premature mortality rate (PMR) as an ordering framework for all relevant PHC profiles. A key aspect of planning for PHC renewal is to understand how well the current system responds to the needs of the populations it serves. We have chosen premature mortality rate—generally recognized as the best indicator of population health status^{7,8,9,10}—as the central measure of need for health care.

As a measure of need, low population health status (high PMR) suggests that health care services use should be higher, while high population health status (low PMR) predicts lower use of health care services.¹¹ Premature mortality rate is fully profiled in Chapter 3.

For all other profiles, values for PMR are used to rank order local health areas. For example, Fraser Health Authority (and its component local health areas) is ordered at the top of each bar chart in all profiles because it has the lowest value for PMR of all health authorities. This allows each PHC profile to be easily benchmarked to health status, helping to inform judgements about the responsiveness of PHC to the need for health care. The association of health status with health care services use is explored in greater depth for key PHC profiles in Chapter 7.

About the PHC profiles

The majority of profiles mapped in this report are based on readily available data from the BC Ministry of Health Services, BC Stats, the BC Vital Statistics Agency, and Statistics Canada. Any limitation associated with a particular data source has therefore been carried forward into our analyses. For example, the supply of nurses could only be profiled as a general count rather than a specific overview of nurses providing PHC because available data do not readily identify the type of services these providers deliver. We were also unable to develop a

profile of general practice provider group practices due to the lack of readily available information about practice relationships between providers.

However, ongoing research has allowed us to increase the robustness of the data used for a number of profiles. First, as initially detailed in the *British Columbia Health Atlas (2nd edition)*,¹² CHSPR's calculation of premature mortality rates also includes out-of-province deaths of BC residents not otherwise captured in the provincial data. This has a significant effect on areas of the province that border Alberta.

Second, the profile for expenditures on general practice services has been improved by the addition of Alternative Payments Program and primary health care organization data to Medical Services Plan (MSP) fee-for-service billing claims. While more work needs to be done to fine-tune this profile, this is a significant development toward analysis of local health areas with heavy reliance on services funded outside the MSP.

A special mention must also be made of our decision to introduce new terms to define PHC providers and the services they deliver. Researchers and analysts in the province have historically, and correctly, used the terms “general practitioners” and/or “family physicians” when referring to physicians who hold these specialty designations. But these terms have also been used to refer to physicians who predominantly bill for general practice services: these physicians may hold designations in pediatrics, internal medicine or other specialties.

In this report, we use terms tied closely to the methodology used to construct the provider-related profiles. **General practice providers** describes physicians defined by type-of-practice methodology and may therefore include physicians who hold specialty designations other than general practitioner or family physician. This term also includes providers who deliver PHC services through service organizations that do not bill fee-for-service. **General practice services** are defined by fee item specialty methodology and are an indication of expenditures in a particular fee category, irrespective of the specialty des-

ignation of the provider who billed for the services. PHC services delivered by service organizations that do not bill fee-for-service are also included.

These definitions are by nature still emerging and we will be developing and refining them further throughout our research program. However, a core theme is our desire to distinguish providers on the basis of the way they actually practice. More detail on the provider-related profiles is provided in Appendix 1.

Methods

The majority of profiles presented in this report are mapped in the standard format used for the *BC Health Atlas*, which uses BC's sub-provincial geographic boundaries for health services planning and delivery: five¹³ **health authorities**—Fraser, Vancouver Island, Vancouver Coastal, Interior and Northern; sixteen **health service delivery areas**; and eighty-nine **local health areas**, the smallest unit of analysis.¹⁴

This report presents **population-based analyses**, where services, when measured, are attributed to individuals based on where they live rather than where they may have received that care. This approach is especially important in assessing the responsiveness of the primary health care system, as geographic profiles accurately represent variations in the way residents of different areas of the province access and use services. Denominator populations were determined using data from PEOPLE 28¹⁵, BC Stats, unless otherwise noted.

Values are categorized using the **natural breaks (Jenks) methodology** with a pre-set number of five categories. In most situations where only one local health area fell into a category by itself, the outlier value was removed, the natural breaks were recalculated, and the outlier value assigned to the relevant category.

More detailed information about the methods used throughout this report is available in Definitions and technical notes.

Understanding the profiles

The majority of the profiles in this report are mapped according to the same eight-page format used in the *BC Health Atlas*. Our interpretation is limited to notable highs, lows and variability within and across health authorities, in recognition of the need for local knowledge of geographic peculiarities and underlying trends.

Page one of each profile presents a choropleth map of British Columbia (1), including an inset of the Vancouver area and the southern tip of Vancouver Island (2). The map depicts the 89 local health areas and uses higher-contrast borders (3) to show health authority boundaries. The legend (4) in the lower left corner includes a modified histogram showing the minimum and maximum values of the profile, the break-points between data classes, and the number of local health areas that fall into each of the five classes. A description of the profile (5) is also provided, including data sources and any known limitations.

Page two displays similar information in two different chart forms. The vertical “line and dot” chart (6) is designed for easy comparability of the distribution of values between local health areas within and across each health authority. Each circle represents a local health area within its given health authority (7). The overall value for the health authority (8) and the province (9) are marked.

The bar chart (10) retains the grouping of local health areas within health authorities, ordered from top to bottom on the basis of increasing premature mortality rate (declining health status). Haphazard ordering for a given profile indicates low association with premature mortality rate. If the values for a given profile increase with premature mortality rate, bars on the chart will increase in size from top to bottom.

Page three displays data at the health service delivery area level. A cartogram (11) is used for understanding differences in health status or health care services use in areas where there is an uneven pattern of settlement. Circles are sized according to population size and coloured to reflect the health service delivery area value for the given profile, a weighted average of the local health area values. The circles rest on a stylized map of British Columbia, which provides a general sense of the geographic location of each of these areas.

A vertical “line and dot” chart (12) and a bar chart (13) display the health service delivery area and health authority values for the given profile. The relevance, province-wide variability, and any geographic trends of the profile are noted (14).

Pages four through eight provide specific information for each of the five health authorities, including a choropleth map (15), cartogram (16), and a table of local health area values (17). Because of their size and geographic arrangement, the Vancouver Coastal and Vancouver Island health authority maps are drawn in perspective view—as if you were standing at the southern part of the region and looking northwest. Notable highlights for each health authority are discussed (18).

Chapter 3: Primary Health Care Contexts

To design a PHC system responsive to the needs of various communities, it is important to understand the demographic and health characteristics of the population, as well as contextual factors that could affect the need, demand and use of health care. Profiles in this section provide information on population density, population growth, demographics, and health status. The socioeconomic risk index and children at risk index (developed by BC Stats) are included as indicators of the important social and economic contexts that influence the health and health care use of populations.

This section contains profiles of:

PROFILE	DATA	SOURCE*	AVAILABLE
Demographics			
Population density	2001	Statistics Canada	p. 7-8
Population age and gender structure	2001	Statistics Canada	Website only
Population growth	1991-2001	BC Stats	Website/CD only
Older adults (percentage of population aged 65+)	2001	BC Stats	p. 9-16
Older adults living alone (percentage of population aged 65+ living alone)	2001	Statistics Canada	Website/CD only
Children and adolescents (percentage of population aged 0-19)	2001	BC Stats	Website/CD only
Health status			
Premature mortality (rate per 1,000 population)	1996-2000	CHSPR	p. 17-24
Potential years of life lost index	1997-2001	BC Vital Statistics Agency	Website/CD only
Infant mortality (rate per 1,000 live births)	1997-2001	BC Vital Statistics Agency	Website/CD only
Social and economic contexts			
Children at risk index	1997-2002	BC Stats	Website/CD only
Socioeconomic risk	1997-2002	BC Stats	p. 25-31

A number of profiles relevant to PHC contexts are also available in the *BC Health Atlas (2nd ed.)*:

- [Life expectancy](#) (1997-2001)
- [Age-standardized mortality rate](#) (1996-2000)
- [High users of physician services](#) (2000/01)
- [Population of the dominant centre in each local health area](#) (2001)†
- [Average annual rate of population growth](#) (1996-2001)†
- [Urbanization rate](#) (2001)†
- [Dependency ration](#) (2001)†

*For full details of profile methodology and data sources, refer to Definitions and technical notes.

†Details provided in Section 1.3 Health authority demographics (BC Health Atlas)

Population density was calculated using data from the 2001 Census. In 2001, the total population of British Columbia was 4,101,579. Due to geography and historical settlement patterns, population distribution is uneven. Roughly 70% of the province's population resides on 1.3% of its landmass, and the remaining 30% are settled primarily in the Okanagan, the Kootenays, and along the few highways that extend northward. Sixty percent of residents live in the Lower Mainland. The health authorities that serve this area, Fraser Health Authority and Vancouver Coastal Health Authority, recorded populations of 1,396,032 and 1,026,313, respectively.

In contrast, Northern Health Authority, which encompasses a larger geographic area than all other health authorities combined, had a population of only 299,455. Vancouver Island Health Authority and Interior Health Authority recorded similar populations at 695,367 and 684,412, respectively. This population distribution creates challenges for ensuring access to primary health care across the province.

Urban region population

8

Source: 2001 Census, Statistics Canada
Year: 2001

Population figures are given for all urban regions in BC with a population greater than 2,000. Urban Areas are defined by Statistics Canada as areas with a minimum population concentration of 1,000 persons and a population density of at least 400 persons per square kilometre.

* Populations marked with an asterisk are not Urban Area populations, but Census Subdivision (CSD) populations. A CSD is defined by Statistics Canada as a municipality or area that is deemed to be equivalent to a municipality for statistical reporting purposes, such as an Indian reserve. Because most of the Lower Mainland is treated as one Urban Area (Vancouver), it has been divided into its component CSDs (Surrey, Burnaby, White Rock etc).

CSD populations were not used for the entire province because they are often misleading. For instance, a large part of a municipal population could be rural or semi-rural. Urban Area population figures more accurately reflect the actual urban populations of towns and cities in BC.

Size rank Urban region 2001 population

Fraser HA		1,396,032
2	Surrey*	347,825
4	Burnaby*	193,954
6	Abbotsford	129,475
7	Coquitlam*	112,890
9	Delta*	96,950
10	Langley (Township)*	86,896
15	Maple Ridge*	63,169
16	New Westminster*	54,656
17	Chilliwack	51,713
18	Port Coquitlam*	51,257
25	Mission*	31,272
26	Port Moody*	23,816
27	Langley (City)*	23,643
32	White Rock*	18,250
35	Pitt Meadows*	14,670
63	Hope	4,578
86	Kent (Agassiz)	2,522

Vancouver Coastal HA		1,026,313
1	Vancouver*	545,671
5	Richmond*	164,345
11	N. Vancouver (District)*	82,310
19	N. Vancouver (City)*	44,303
20	West Vancouver*	41,421
38	Powell River	13,232
40	Squamish	12,635
46	Whistler	8,891
51	Gibsons	6,791
55	Sechelt	5,951

Vancouver Island HA		695,367
3	Victoria	288,346
12	Nanaimo	77,845
23	Courtenay	32,648
24	Campbell River	31,294
28	Duncan	22,101
29	Parksville	21,057
30	Port Alberni	20,309
48	Ladysmith	7,612
54	Sooke	6,118
62	Port Hardy	4,608
72	Cowichan Valley	3,163
75	Lake Cowichan	2,857
76	Port McNeill	2,821
79	Chemainus	2,706
82	Cumberland	2,618

Interior HA		684,412
8	Kelowna	108,330
13	Kamloops	67,952
21	Vernon	39,995
22	Penticton	34,686
31	Cranbrook	18,528
39	Williams Lake	12,997
43	Salmon Arm	10,048
44	Nelson	9,715
45	Trail	9,119
47	Castlegar	8,677
49	Revelstoke	7,500
50	Merritt	7,147
52	Kimberley	6,484
53	Summerland	6,264
56	Duck Lake	5,603
58	Fernie	4,997
60	Creston	4,795
61	Oliver	4,626
64	Dallas	4,344
65	Osoyoos	4,295
66	Armstrong	4,256
67	Grand Forks	4,189
69	Golden	4,020
70	Fruitvale	3,773
71	Rossland	3,603
74	Invermere	2,858
77	Enderby	2,818
78	Sicamous	2,720
80	Princeton	2,694
84	Lillooet	2,574
85	Elkford	2,574
87	Chase	2,460
89	Sparwood	2,254
90	Logan Lake	2,180

Northern HA		299,455
14	Prince George	66,239
33	Terrace	16,795
34	Fort St. John	16,034
36	Prince Rupert	14,643
37	Quesnel	13,727
41	Dawson Creek	10,754
42	Kitimat	10,233
57	Smithers	5,414
59	Mackenzie	4,956
68	Fort Nelson	4,188
73	Houston	2,871
81	Burns Lake	2,623
83	Chetwynd	2,576
88	Fort St. James	2,381

The percentage of the population aged 65 years or older (i.e. older adults) was calculated by dividing the number of older adults in an area by the total population of that area. Information on the number of older adults and the size of the population was derived from PEOPLE 28. In 2001, 13.2% of the province's population was aged 65 years or older.

LHA (ordered by PMR)	Pop. Aged 65+	BC overall
Fraser HA	11.6%	13.2%
37 Delta	10.8%	
202 S. Surrey/White Rock	22.6%	
43 Coquitlam	8.4%	
41 Burnaby	12.9%	
201 Surrey	8.8%	
34 Abbotsford	13.3%	
35 Langley	11.7%	
42 Maple Ridge	10.2%	
33 Chilliwack	15.7%	
76 Agassiz-Harrison	14.2%	
75 Mission	10.4%	
40 New Westminster	13.6%	
32 Hope	16.7%	
Vancouver Coastal HA	12.5%	
45 West Vancouver	20.5%	
164 Vanc. Westside	12.5%	
38 Richmond	11.4%	
166 Vanc. South	13.6%	
44 North Vancouver	11.8%	
163 Vanc. North East	12.8%	
165 Vanc. Midtown	10.6%	
48 Howe Sound	5.7%	
47 Powell River	16.4%	
46 Sunshine Coast	18.2%	
161 Vanc. City Centre	10.7%	
49 Bella Coola	8.2%	
83 Central Coast	7.0%	
162 Vanc. Dntn Eastside	13.9%	
Vancouver Island HA	16.6%	
64 Gulf Islands	23.2%	
63 Saanich	21.6%	
69 Qualicum	26.1%	
62 Sooke	9.9%	
65 Cowichan	15.8%	
66 Lake Cowichan	13.7%	
71 Courtenay	15.6%	
68 Nanaimo	16.0%	
61 Greater Victoria	17.9%	
72 Campbell River	10.5%	
67 Ladysmith	19.4%	
70 Alberni	13.5%	
85 Island North	5.5%	
84 Island West	5.7%	
Interior HA	16.3%	
23 Central Okanagan	17.9%	
4 Windermere	12.1%	
13 Kettle Valley	16.7%	
77 Summerland	24.9%	
20 Salmon Arm	19.2%	
14 South Okanagan	28.9%	
6 Kootenay Lake	16.2%	
1 Fernie	9.1%	
21 Armstrong-Spall.	14.8%	
22 Vernon	17.4%	
15 Penticton	23.5%	
5 Creston	21.9%	
7 Nelson	13.5%	
26 North Thompson	9.3%	
2 Cranbrook	12.5%	
30 South Cariboo	14.9%	
10 Arrow Lakes	16.3%	
12 Grand Forks	19.7%	
9 Castlegar	13.6%	
16 Keremeos	24.7%	
24 Kamloops	12.7%	
3 Kimberley	17.8%	
17 Princeton	19.8%	
27 Cariboo-Chilcotin	8.7%	
19 Revelstoke	11.4%	
29 Lillooet	10.3%	
25 100 Mile House	14.3%	
11 Trail	17.3%	
18 Golden	8.2%	
78 Enderby	16.6%	
31 Merritt	12.0%	
Northern HA	7.6%	
54 Smithers	6.7%	
60 Peace River North	6.2%	
80 Kitimat	7.8%	
53 Upper Skeena	6.6%	
57 Prince George	7.1%	
55 Burns Lake	9.7%	
88 Terrace	7.5%	
28 Quesnel	10.1%	
87 Stikine	9.2%	
59 Peace River South	9.3%	
56 Nechako	7.9%	
52 Prince Rupert	7.7%	
81 Fort Nelson	3.1%	
50 Queen Charlotte	7.2%	
92 Nisga'a	6.5%	
51 Snow Country	4.5%	
94 Telegraph Creek	7.7%

The population of older adults has a higher burden of illness and tends to use more primary health care services than younger populations. It is therefore important to understand the geographic distribution of older adults when planning, organizing and managing health care.

In 2001, 13.2% of British Columbia's population was aged 65 years or older. There were substantial differences across health authorities, health service delivery areas, and local health areas in the percentage of older adults in the population. Vancouver Island Health Authority had the highest percentage of older adults (16.6%), while Northern Health Authority recorded the lowest (7.6%). The percentage of older adults across all local health areas in the Northern Health Authority was lower than the provincial average, ranging from 3.1% in Fort Nelson to 10.1% in Quesnel. Fort Nelson showed the lowest percentage of older adults of all local health areas across the province, while South Okanagan had the highest (28.9%).

Source: PEOPLE 28, BC Stats
Year: 2001

12

The population of older adults has a higher burden of illness and tends to use more primary health care services than younger populations. It is important to understand the geographic distribution of older adults when planning, organizing and managing health care.

In 2001, 13.2% of British Columbia’s population was aged 65 years or older. In the Fraser Health Authority, older adults comprised 11.6% of the population. Within this health authority, the local health areas with the highest percentage of older adults were South Surrey/White Rock, Hope, and Chilliwack. The local health area of Coquitlam recorded the lowest percentage of older adults in this health authority.

Fraser HA		Pop. aged 65+
		11.6%
37	Delta	10.8%
202	S. Surrey/White Rock	22.6%
43	Coquitlam	8.4%
41	Burnaby	12.9%
201	Surrey	8.8%
34	Abbotsford	13.3%
35	Langley	11.7%
42	Maple Ridge	10.2%
33	Chilliwack	15.7%
76	Agassiz-Harrison	14.2%
75	Mission	10.4%
40	New Westminster	13.6%
32	Hope	16.7%

LHAs ordered by PMR

Source: PEOPLE 28, BC Stats
Year: 2001

The population of older adults has a higher burden of illness and tends to use more primary health care services than younger populations. It is therefore important to understand the geographic distribution of older adults when planning, organizing and managing health care.

In 2001, 13.2% of British Columbia's population was aged 65 years or older. In the Vancouver Coastal Health Authority, older adults comprised 12.5% of the population. Within this health authority, the local health areas with the highest percentage of older adults were West Vancouver, Sunshine Coast, and Powell River. Bella Coola, Central Coast and Howe Sound local health areas recorded the lowest percentages of older adults.

Vancouver Coastal HA		Pop. aged 65+
45	West Vancouver	20.5%
164	Vanc. Westside	12.5%
38	Richmond	11.4%
166	Vanc. South	13.6%
44	North Vancouver	11.8%
163	Vanc. North East	12.8%
165	Vanc. Midtown	10.6%
48	Howe Sound	5.7%
47	Powell River	16.4%
46	Sunshine Coast	18.2%
161	Vanc. City Centre	10.7%
49	Bella Coola	8.2%
83	Central Coast	7.0%
162	Vanc. Dntn Eastside	13.9%
LHAs ordered by PMR

Source: PEOPLE 28, BC Stats
Year: 2001

14

The population of older adults has a higher burden of illness and tends to use more primary health care services than younger populations. It is therefore important to understand the geographic distribution of older adults when planning, organizing and managing health care.

In 2001, 13.2% of British Columbia’s population was aged 65 years or older. In the Vancouver Island Health Authority, older adults comprised 16.6% of the population—the highest percentage shown for any health authority. Within this health authority three local health areas recorded very high percentages of older adults: Qualicum, Gulf Islands, and Saanich. At the other extreme, the local health areas of Island North and Island West showed much lower percentages of older adults.

Vancouver Island HA		Pop. aged 65+
16.6%		
64	Gulf Islands	23.2%
63	Saanich	21.6%
69	Qualicum	26.1%
62	Sooke	9.9%
65	Cowichan	15.8%
66	Lake Cowichan	13.7%
71	Courtenay	15.6%
68	Nanaimo	16.0%
61	Greater Victoria	17.9%
72	Campbell River	10.5%
67	Ladysmith	19.4%
70	Alberni	13.5%
85	Island North	5.5%
84	Island West	5.7%
LHAs ordered by PMR

The population of older adults has a higher burden of illness and tends to use more primary health care services than younger populations. It is therefore important to understand the geographic distribution of older adults when planning, organizing and managing health care.

In 2001, 13.2% of British Columbia's population was aged 65 years or older. In the Interior Health Authority, older adults comprised 16.3% of the population. Within this health authority there were a number of local health areas with very high percentages of older adults: Summerland, Keremeos, Penticton, and Creston. South Okanagan recorded the highest percentage of older adults of all local health areas in the province. The local health area with the lowest percentage of older adults in this health authority was Golden.

Interior HA		Pop. aged 65+ 16.3%
23	Central Okanagan	17.9%
4	Windermere	12.1%
13	Kettle Valley	16.7%
77	Summerland	24.9%
20	Salmon Arm	19.2%
14	South Okanagan	28.9%
6	Kootenay Lake	16.2%
1	Fernie	9.1%
21	Armstrong-Spall.	14.8%
22	Vernon	17.4%
15	Penticton	23.5%
5	Creston	21.9%
7	Nelson	13.5%
26	North Thompson	9.3%
2	Cranbrook	12.5%
30	South Cariboo	14.9%
10	Arrow Lakes	16.3%
12	Grand Forks	19.7%
9	Castlegar	13.6%
16	Keremeos	24.7%
24	Kamloops	12.7%
3	Kimberley	17.8%
17	Princeton	19.8%
27	Cariboo-Chilcotin	8.7%
19	Revelstoke	11.4%
29	Lillooet	10.3%
25	100 Mile House	14.3%
11	Trail	17.3%
18	Golden	8.2%
78	Enderby	16.6%
31	Merritt	12.0%

LHAs ordered by PMR

Source: PEOPLE 28, BC Stats
Year: 2001

16

The population of older adults has a higher burden of illness and tends to use more primary health care services than younger populations. It is therefore important to understand the geographic distribution of older adults when planning, organizing and managing health care.

In 2001, 13.2% of British Columbia’s population was aged 65 years or older. In the Northern Health Authority, older adults comprised 7.6% of the population—the lowest percentage shown for any health authority. There was very little variation in the percentage of older adults across local health areas in this health authority. The highest percentage of older adults was recorded for the local health area of Quesnel, and the lowest for Fort Nelson. Fort Nelson showed the lowest percentage of older adults of all local health areas across the province.

Northern HA		Pop. aged 65+
		7.6%
54	Smithers	6.7%
60	Peace River North	6.2%
80	Kitimat	7.8%
53	Upper Skeena	6.6%
57	Prince George	7.1%
55	Burns Lake	9.7%
88	Terrace	7.5%
28	Quesnel	10.1%
87	Stikine	9.2%
59	Peace River South	9.3%
56	Nechako	7.9%
52	Prince Rupert	7.7%
81	Fort Nelson	3.1%
50	Queen Charlotte	7.2%
92	Nisga'a	6.5%
51	Snow Country	4.5%
94	Telegraph Creek	7.7%

LHAs ordered by PMR

LHA (ordered by PMR)	PMR	BC average
Fraser HA	2.67	2.81
37 Delta	2.18	
202 S. Surrey/White Rock	2.29	
43 Coquitlam	2.42	
41 Burnaby	2.54	
201 Surrey	2.66	
34 Abbotsford	2.67	
35 Langley	2.86	
42 Maple Ridge	2.92	
33 Chilliwack	2.96	
76 Agassiz-Harrison	3.16	
75 Mission	3.39	
40 New Westminster	3.45	
32 Hope	4.12	
Vancouver Coastal HA	2.71	
45 West Vancouver	1.89	
164 Vanc. Westside	1.99	
38 Richmond	2.01	
166 Vanc. South	2.27	
44 North Vancouver	2.39	
163 Vanc. North East	2.45	
165 Vanc. Midtown	2.79	
48 Howe Sound	2.84	
47 Powell River	3.03	
46 Sunshine Coast	3.09	
161 Vanc. City Centre	3.53	
49 Bella Cooola	4.04	
83 Central Coast	6.28	
162 Vanc. Dntn Eastside	7.33	
Vancouver Island HA	2.88	
64 Gulf Islands	2.16	
63 Saanich	2.22	
69 Qualicum	2.46	
62 Sooke	2.69	
65 Cowichan	2.75	
66 Lake Cowichan	2.77	
71 Courtenay	2.84	
68 Nanaimo	2.98	
61 Greater Victoria	3.05	
72 Campbell River	3.24	
67 Ladysmith	3.46	
70 Alberni	3.64	
85 Island North	3.83	
84 Island West	4.10	
Interior HA	2.91	
23 Central Okanagan	2.27	
4 Windermere	2.33	
13 Kettle Valley	2.62	
77 Summerland	2.73	
20 Salmon Arm	2.74	
14 South Okanagan	2.77	
6 Kootenay Lake	2.81	
1 Fernie	2.84	
21 Armstrong-Spall.	2.89	
22 Vernon	2.90	
15 Penticton	2.96	
5 Creston	2.97	
7 Nelson	2.97	
26 North Thompson	3.12	
2 Cranbrook	3.14	
30 South Cariboo	3.18	
10 Arrow Lakes	3.21	
12 Grand Forks	3.22	
9 Castlegar	3.24	
16 Keremeos	3.25	
24 Kamloops	3.26	
3 Kimberley	3.27	
17 Princeton	3.27	
27 Cariboo-Chilcotin	3.28	
19 Revelstoke	3.32	
29 Lillooet	3.47	
25 100 Mile House	3.49	
11 Trail	3.56	
18 Golden	3.59	
78 Enderby	3.61	
31 Merritt	4.18	
Northern HA	3.41	
54 Smithers	2.91	
60 Peace River North	2.95	
80 Kitimat	3.10	
53 Upper Skeena	3.11	
57 Prince George	3.35	
55 Burns Lake	3.38	
88 Terrace	3.39	
28 Quesnel	3.47	
87 Stikine	3.51	
59 Peace River South	3.62	
56 Nechako	3.76	
52 Prince Rupert	3.82	
81 Fort Nelson	3.84	
50 Queen Charlotte	4.10	
92 Nisga'a	5.02	
51 Snow Country	5.06	
94 Telegraph Creek	6.94

The premature mortality rate (PMR) is generally considered the best single proxy of overall population health care needs, largely due to its focus on potentially preventable deaths. High rates of premature mortality indicate lower health status and higher needs for health care.

In 1996-2000, British Columbia had a low premature mortality rate (2.81 per 1,000 population) indicating good overall population health. However, there was close to a four-fold variation in premature mortality rates for local health areas across the province. Across health authorities, Fraser Health Authority had the lowest rate (2.67 per 1,000 population) while Northern Health Authority had the highest (3.41 per 1,000 population). Vancouver Coastal Health Authority showed highly variable overall health status: the Vancouver Downtown Eastside local health area recorded the highest premature mortality rate in the province (7.33 per 1,000 population), while West Vancouver recorded the lowest (1.89 per 1,000 population). Northern Health Authority also displayed variable rates across its local health areas.

Sources: BC Vital Statistics Agency; Hospital separations data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Years: 1996-2000

Sources: BC Vital Statistics Agency; Hospital separations data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Years: 1996-2000

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The premature mortality rate (PMR) is generally considered the best single proxy of overall population health care needs, largely due to its focus on potentially preventable deaths. High rates of premature mortality indicate lower health status and higher needs for health care. The rate for British Columbia was 2.81 per 1,000 population in 1996-2000.

The premature mortality rate for Fraser Health Authority was 2.67 per 1,000 population—the lowest of all health authorities. There was a two-fold variation in premature mortality rates across its local health areas and a slight west-east trend. The local health area of Hope, with its small and dispersed population, showed the lowest health status with a premature mortality rate of 4.12 per 1,000 population. New Westminster, a small but densely populated local health area, had a markedly higher premature mortality rate than the surrounding regions. The local health areas with the lowest rates were Delta and South Surrey/White Rock at 2.18 and 2.29 per 1,000 population, respectively.

		PMR
Fraser HA		2.67
37	Delta	2.18
202	S. Surrey/White Rock	2.29
43	Coquitlam	2.42
41	Burnaby	2.54
201	Surrey	2.66
34	Abbotsford	2.67
35	Langley	2.86
42	Maple Ridge	2.92
33	Chilliwack	2.96
76	Agassiz-Harrison	3.16
75	Mission	3.39
40	New Westminster	3.45
32	Hope	4.12

LHAs ordered by PMR

Sources: BC Vital Statistics Agency; Hospital separations data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Years: 1996-2000

The premature mortality rate (PMR) is generally considered the best single proxy of overall population health care needs, largely due to its focus on potentially preventable deaths. High rates of premature mortality indicate lower health status and higher needs for health care. The rate for British Columbia was 2.81 per 1,000 population in 1996-2000.

The premature mortality rate for Vancouver Coastal Health Authority was 2.71 per 1,000 population—the second lowest rate across the health authorities. There was nearly a four-fold variation in premature mortality rates across its local health areas. The local health areas of Vancouver Downtown Eastside and Central Coast had the highest premature mortality rates at 7.33 and 6.28 per 1,000 population, respectively. The lowest rates were in West Vancouver and Vancouver Westside at 1.89 and 1.99 per 1,000 population, respectively.

Vancouver Coastal HA		PMR
		2.71
45	West Vancouver	1.89
164	Vanc. Westside	1.99
38	Richmond	2.01
166	Vanc. South	2.27
44	North Vancouver	2.39
163	Vanc. North East	2.45
165	Vanc. Midtown	2.79
48	Howe Sound	2.84
47	Powell River	3.03
46	Sunshine Coast	3.09
161	Vanc. City Centre	3.53
49	Bella Coala	4.04
83	Central Coast	6.28
162	Vanc. Dntn Eastside	7.33

LHAs ordered by PMR

Sources: BC Vital Statistics Agency; Hospital separations data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Years: 1996-2000

The premature mortality rate (PMR) is generally considered the best single proxy of overall population health care needs, largely due to its focus on potentially preventable deaths. High rates of premature mortality indicate lower health status and higher needs for health care. The rate for British Columbia was 2.81 per 1,000 population in 1996-2000.

The premature mortality rate for Vancouver Island Health Authority was 2.88 per 1,000 population. There was a nearly two-fold variation in premature mortality rates across its local health areas and a clear north-south gradient. The less populated northern local health areas of Island West and Island North had the highest rates at 4.10 and 3.83 per 1,000 population, respectively. The more densely populated southern areas of Gulf Islands and Saanich had the lowest rates at 2.16 and 2.22 per 1,000 population, respectively. The large urban local health area of Greater Victoria had a premature mortality rate of 3.05 per 1,000 population.

Vancouver Island HA		PMR
		2.88
64	Gulf Islands	2.16
63	Saanich	2.22
69	Qualicum	2.46
62	Sooke	2.69
65	Cowichan	2.75
66	Lake Cowichan	2.77
71	Courtenay	2.84
68	Nanaimo	2.98
61	Greater Victoria	3.05
72	Campbell River	3.24
67	Ladysmith	3.46
70	Alberni	3.64
85	Island North	3.83
84	Island West	4.10

LHAs ordered by PMR

The premature mortality rate (PMR) is generally considered the best single proxy of overall population health care needs, largely due to its focus on potentially preventable deaths. High rates of premature mortality indicate lower health status and higher needs for health care. The rate for British Columbia was 2.81 per 1,000 population in 1996-2000.

The premature mortality rate for Interior Health Authority was 2.91 per 1,000 population—the second highest rate across the health authorities. There was a less than two-fold variation in premature mortality rates across its local health areas, with no obvious geographic pattern. The local health area of Merritt had the highest rate at 4.18 per 1,000 population and the Central Okanagan had the lowest rate at 2.27 per 1,000 population.

Interior HA		PMR
2.91		
23	Central Okanagan	2.27
4	Windermere	2.33
13	Kettle Valley	2.62
77	Summerland	2.73
20	Salmon Arm	2.74
14	Southern Okanagan	2.77
6	Kootenay Lake	2.81
1	Fernie	2.84
21	Armstrong - Spall.	2.89
22	Vernon	2.90
15	Penticton	2.96
5	Creston	2.97
7	Nelson	2.97
26	North Thompson	3.12
2	Cranbrook	3.14
30	South Cariboo	3.18
10	Arrow Lakes	3.21
12	Grand Forks	3.22
9	Castlegar	3.24
16	Keremeos	3.25
24	Kamloops	3.26
3	Kimberley	3.27
17	Princeton	3.27
27	Cariboo - Chilcotin	3.28
19	Revelstoke	3.32
29	Lillooet	3.47
25	100 Mile House	3.49
11	Trail	3.56
18	Golden	3.59
78	Enderby	3.61
31	Merritt	4.18

LHAs ordered by PMR

Sources: BC Vital Statistics Agency; Hospital separations data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Years: 1996-2000

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The premature mortality rate (PMR) is generally considered the best single proxy of overall population health care needs, largely due to its focus on potentially preventable deaths. High rates of premature mortality indicate lower health status and higher needs for health care. The rate for British Columbia was 2.81 per 1,000 population in 1996-2000.

The premature mortality rate for Northern Health Authority was 3.41 per 1,000 population—the highest rate of all health authorities. There was a more than two-fold variation in premature mortality rates across its local health areas, with all local health areas reporting rates higher than the provincial average. The two local health areas with the lowest rates were Smithers (2.91 per 1,000 population) and Peace River North (2.95 per 1,000 population). Peace River North is a potentially interesting case study, given its small population base, remote location and moderate health status. Areas with the highest rates were Telegraph Creek (6.94 per 1,000 population), Snow Country (5.06 per 1,000 population) and Nisga’a (5.02 per 1,000 population).

Northern HA		PMR
Northern HA		3.41
54	Smithers	2.91
60	Peace River North	2.95
80	Kitimat	3.10
53	Upper Skeena	3.11
57	Prince George	3.35
55	Burns Lake	3.38
88	Terrace	3.39
28	Quesnel	3.47
87	Stikine	3.51
59	Peace River South	3.62
56	Nechako	3.76
52	Prince Rupert	3.82
81	Fort Nelson	3.84
50	Queen Charlotte	4.10
92	Nisga'a	5.02
51	Snow Country	5.06
94	Telegraph Creek	6.94

LHAs ordered by PMR

Source: BC Stats
Years: 1997-2002

Socioeconomic risk is generally considered to be a strong indicator of population health risk. High index scores are correlated with lower levels of health. Premature mortality rate (PMR)—the best single proxy of overall population health care needs—shows a high correlation with socioeconomic risk.

A wide range of socioeconomic risk was recorded among local health areas in the Fraser Health Authority. The local health area of Delta showed one of the lowest levels of socioeconomic risk in the province (ranked third lowest) while the local health area of Hope showed one of the highest (ranked fifth highest). Low levels of risk were also evident in the western local health areas of Coquitlam, Langley, Maple Ridge and Abbotsford. High levels of risk were evident in the eastern local health areas of Hope, Agassiz-Harrison, Mission and Chilliwack, and the western local health area of New Westminster.

Fraser HA		Socioeconomic risk index
37	Delta	-0.73
43	Coquitlam	-0.43
41	Burnaby	-0.04
201/202	Surrey/S. Surrey	0.15
34	Abbotsford	-0.14
35	Langley	-0.32
42	Maple Ridge	-0.25
33	Chilliwack	0.25
76	Agassiz-Harrison	0.38
75	Mission	0.30
40	New Westminster	0.37
32	Hope	0.69

LHAs ordered by PMR

Source: BC Stats
Years: 1997-2002

Socioeconomic risk is generally considered to be a strong indicator of population health risk. High index scores are correlated with lower levels of health. Premature mortality rate (PMR)—the best single proxy of overall population health care needs—shows a high correlation with socioeconomic risk.

A wide range of socioeconomic risk was recorded among local health areas in the Vancouver Coastal Health Authority. Low levels of risk were evident in the local health areas of North Vancouver, Richmond, and Howe Sound. West Vancouver-Bowen Island local health area showed the lowest socioeconomic risk in the province. High levels of risk were evident in the local health areas of Bella Coola, Powell River, and Vancouver. It is important to note, however, that Vancouver’s six local health areas have been aggregated for calculation of this index. In reality, socioeconomic conditions vary widely within Vancouver, as does the premature mortality rate, with Vancouver Westside showing a low rate and Vancouver Downtown Eastside showing a high rate.

Vancouver Coastal HA		Socioeconomic risk index
45	West Vancouver	-0.98
38	Richmond	-0.55
44	North Vancouver	-0.65
48	Howe Sound	-0.39
161-166	Vancouver	0.22
47	Powell River	0.27
46	Sunshine Coast	-0.02
49	Bella Coola	0.58
83	Central Coast	—

LHAs ordered by PMR

Source: BC Stats
Years: 1997-2002

Socioeconomic risk is generally considered to be a strong indicator of population health risk. High index scores are correlated with lower levels of health. Premature mortality rate (PMR)—the best single proxy of overall population health care needs—shows a high correlation with socioeconomic risk.

A wide range of socioeconomic risk was recorded among local health areas in the Vancouver Island Health Authority. Low levels of risk were evident in the south-eastern local health areas—Saanich, Gulf Islands, Sooke, Greater Victoria, and Ladysmith. High levels of risk were evident in the north-western local health areas of Alberni, Campbell River, and Vancouver Island North. There is also a slight north-south gradient with respect to socioeconomic risk in the Vancouver Island Health Authority.

Vancouver Island HA		Socioeconomic risk index
64	Gulf Islands	-0.55
63	Saanich	-0.81
69	Qualicum	-0.24
62	Sooke	-0.38
65	Cowichan	0.12
66	Lake Cowichan	0.44
71	Courtenay	0.01
68	Nanaimo	0.32
61	Greater Victoria	-0.13
72	Campbell River	0.40
67	Ladysmith	-0.12
70	Alberni	0.69
85	Island North	0.23
84	Island West	—
LHAs ordered by PMR

Socioeconomic risk is generally considered to be a strong indicator of population health risk. High index scores are correlated with lower levels of health. Premature mortality rate (PMR)—the best single proxy of overall population health care needs—shows a high correlation with socioeconomic risk.

Local health areas within the Interior Health Authority recorded among the lowest and highest levels of socioeconomic risk in the province. Low levels of risk were evident in many eastern local health areas: Kimberley, Windermere, Summerland and Armstrong-Spallumcheen. The highest levels of socioeconomic risk in the province were evident in the western local health areas of Merritt, Princeton, and South Cariboo.

Socioeconomic risk index		
Interior HA		
23	Central Okanagan	-0.28
4	Windermere	-0.60
13	Kettle Valley	-0.09
77	Summerland	-0.57
20	Salmon Arm	-0.12
14	South Okanagan	-0.15
6	Kootenay Lake	0.07
1	Fernie	-0.36
21	Armstrong-Spall.	-0.46
22	Vernon	0.04
15	Penticton	-0.03
5	Creston	0.09
7	Nelson	-0.18
26	North Thompson	0.10
2	Cranbrook	-0.17
30	South Cariboo	0.54
10	Arrow Lakes	0.08
12	Grand Forks	-0.10
9	Castlegar	-0.14
16	Keremeos	0.25
24	Kamloops	0.14
3	Kimberley	-0.68
17	Princeton	0.62
27	Cariboo-Chilcotin	0.46
27	Revelstoke	-0.35
29	Lillooet	0.27
25	100 Mile House	0.18
11	Trail	-0.31
18	Golden	-0.22
78	Enderby	0.48
31	Merritt	0.88
LHAs ordered by PMR

Source: BC Stats
Years: 1997-2002

Socioeconomic risk is generally considered to be a strong indicator of population health risk. High index scores are correlated with lower levels of health. Premature mortality rate (PMR)—the best single proxy of overall population health care needs—shows a high correlation with socioeconomic risk.

A wide range of socioeconomic risk was recorded among local health areas in the Northern Health Authority. Smithers was the only local health area to report a low level of risk. Nearly half (six of 13) of the local health areas fell within the highest category for socioeconomic risk: Terrace, Nisga’a, Prince Rupert, Nechako, Burns Lake and Upper Skeena.

Northern HA		Socioeconomic risk index
54	Smithers	-0.13
60	Peace River North	-0.06
80	Kitimat	-0.02
53	Upper Skeena	0.90
57	Prince George	0.44
55	Burns Lake	0.69
88	Terrace	0.53
28	Quesnel	0.25
87	Stikine	—
59	Peace River South	0.35
56	Nechako	0.60
52	Prince Rupert	0.59
81	Fort Nelson	0.03
50	Queen Charlotte	—
92	Nisga'a	0.58
51	Snow Country	—
94	Telegraph Creek	—
LHAs ordered by PMR		

Chapter 4: Primary Health Care Inputs

All PHC systems rely on financial, material and human resources to deliver care. Profiles in this section provide information on expenditures on primary health care services, and the supply and distribution of health care professionals who deliver these services.

This section contains profiles of:

PROFILE	DATA	SOURCE*	AVAILABLE
Expenditures on general practice services (per capita)	2000/01	CHSPR (new analysis)	p. 33-40
Supply of general practice providers (rate of FTE providers per 10,000 population)	2000/01	CHSPR (new analysis)	p. 41-48
Geographic location of general practice providers	2001/02	CHSPR (new analysis)	p. 49-53
Supply of nurses (crude rate per 10,000 population)	2000	CHSPR	Website/CD only

*For full details of profile methodology and data sources, refer to Definitions and technical notes.

LHA (ordered by PMR)		Expenditures	BC average
Fraser HA		\$159	\$164
37	Delta	\$161	
43	Coquitlam	\$148	
41	Burnaby	\$149	
201/202	Surrey/S. Surrey	\$167	
34	Abbotsford	\$165	
35	Langley	\$150	
42	Maple Ridge	\$166	
33	Chilliwack	\$153	
76	Agassiz-Harrison	\$127	
75	Mission	\$190	
40	New Westminster	\$159	
32	Hope	\$210	
Vancouver Coastal HA		\$157	
45	West Vancouver	\$150	
164	Vanc. Westside	\$132	
38	Richmond	\$147	
166	Vanc. South	\$156	
44	North Vancouver	\$157	
163	Vanc. North East	\$159	
165	Vanc. Midtown	\$167	
48	Howe Sound	\$176	
47	Powell River	\$175	
46	Sunshine Coast	\$163	
161	Vanc. City Centre	\$159	
49/83	Bella Coola/Cent. C.	\$367	
162	Vanc. Dntn Eastside	\$188	
Vancouver Island HA		\$169	
64	Gulf Islands	\$159	
63	Saanich	\$155	
69	Qualicum	\$162	
62	Sooke	\$166	
65	Cowichan	\$164	
66	Lake Cowichan	\$160	
71	Courtenay	\$159	
68	Nanaimo	\$158	
61	Greater Victoria	\$172	
72	Campbell River	\$189	
67	Ladysmith	\$196	
70	Alberni	\$183	
85	Island North	\$232	
84	Island West	\$182	
Interior HA		\$166	
23	Central Okanagan	\$152	
4	Windermere	\$141	
13	Kettle Valley	\$146	
77	Summerland	\$161	
20	Salmon Arm	\$147	
14	South Okanagan	\$178	
6	Kootenay Lake	\$155	
1	Fernie	\$197	
21	Armstrong-Spall.	\$150	
22	Vernon	\$172	
15	Penticton	\$159	
5	Creston	\$176	
7	Nelson	\$172	
26	North Thompson	\$184	
2	Cranbrook	\$185	
30	South Cariboo	\$163	
10	Arrow Lakes	\$209	
12	Grand Forks	\$184	
9	Castlegar	\$161	
16	Keremeos	\$164	
24	Kamloops	\$158	
3	Kimberley	\$157	
17	Princeton	\$201	
27	Cariboo-Chilcotin	\$155	
19	Revelstoke	\$175	
29	Lillooet	\$215	
25	100 Mile House	\$195	
11	Trail	\$176	
18	Golden	\$174	
78	Enderby	\$205	
31	Merritt	\$263	
Northern HA		\$196	
54	Smithers	\$208	
60	Peace River North	\$176	
80	Kitimat	\$246	
53	Upper Skeena	\$315	
57	Prince George	\$166	
55	Burns Lake	\$215	
88	Terrace	\$217	
28	Quesnel	\$178	
59	Peace River South	\$187	
56	Nechako	\$172	
52	Prince Rupert	\$239	
81	Fort Nelson	\$243	
50	Queen Charlotte	\$302	
51/87/94	Snow C./Stik./Tel. Ck.	\$420	
92	Nisga'a	\$475

General practice is pivotal to the provision of primary health care. In 2000/01 expenditures on general practice services in British Columbia were approximately \$665 million or \$164 per capita. This includes payments made through the Medical Service Plan fee-for-service system, the Alternative Payments Program and primary health care organizations.

There was variation in age-standardized expenditures per capita between health authorities, health service delivery areas and local health areas across the province. The Northern Health Authority had the highest per capita expenditures and greatest variation across health service delivery areas and local health areas. By comparison, per capita expenditures were similar in Fraser, Vancouver Coastal, Vancouver Island and Interior health authorities. Across local health areas, expenditures ranged from \$127 per capita in Agassiz-Harrison to \$475 per capita in Nisga'a.

Sources: PURRFECT 8.1; Out-of-province payment data; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 27, BC Stats Year: 2000/01

Sources: PURRFECT 8.1; Out-of-province payment data; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 27, BC Stats
Year: 2000/01

In 2000/01 expenditures on general practice services in British Columbia were approximately \$665 million or \$164 per capita. This includes payments made through the Medical Service Plan fee-for-service system, the Alternative Payments Program and primary health care organizations.

Expenditures in Fraser Health Authority totalled \$215 million or \$157 per capita. Age-standardized expenditures were \$159 per capita.

The local health areas of Hope and Mission had the highest age-standardized expenditures at \$210 and \$190 per capita, respectively. By comparison, Agassiz-Harrison had the lowest expenditures at \$127 per capita. All other local health areas had expenditures at or slightly below the provincial average.

Fraser HA		Per capita expenditures
		\$159
37	Delta	\$161
43	Coquitlam	\$148
41	Burnaby	\$149
201/202	Surrey/S. Surrey	\$167
34	Abbotsford	\$165
35	Langley	\$150
42	Maple Ridge	\$166
33	Chilliwack	\$153
76	Agassiz-Harrison	\$127
75	Mission	\$190
40	New Westminster	\$159
32	Hope	\$210

LHAs ordered by PMR

Sources: PURRFECT 8.1; Out-of-province payment data; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 27, BC Stats
Year: 2000/01

In 2000/01 expenditures on general practice services in British Columbia were approximately \$665 million or \$164 per capita. This includes payments made through the Medical Service Plan fee-for-service system, the Alternative Payments Program and primary health care organizations.

Expenditures in the Vancouver Coastal Health Authority totalled \$159 million or \$157 per capita. Age-standardized expenditures were also \$157 per capita.

The combined local health areas of Bella Coola/Central Coast had the highest age-standardized expenditures at \$367 per capita, and Vancouver Westside had the lowest expenditures at \$132 per capita. Vancouver–Downtown Eastside had the second highest expenditure level at \$188 per capita.

Vancouver Coastal HA		Per capita expenditures
		\$157
45	West Vancouver	\$150
164	Vanc. Westside	\$132
38	Richmond	\$147
166	Vanc. South	\$156
44	North Vancouver	\$157
163	Vanc. North East	\$159
165	Vanc. Midtown	\$167
48	Howe Sound	\$176
47	Powell River	\$175
46	Sunshine Coast	\$163
161	Vanc. City Centre	\$159
49/83	Bella Coola/Cent. C.	\$367
162	Vanc. Dntn Eastside	\$188

LHAs ordered by PMR

Sources: PURRFECT 8.1; Out-of-province payment data; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 27, BC Stats
Year: 2000/01

In 2000/01 expenditures on general practice services in British Columbia were approximately \$665 million or \$164 per capita. This includes payments made through the Medical Service Plan fee-for-service system, the Alternative Payments Program and primary health care organizations.

Expenditures in the Vancouver Island Health Authority totalled \$121 million or \$175 per capita. Age-standardized expenditures were \$169 per capita.

The local health area of Island North had the highest age-standardized expenditures at \$232 per capita, and Saanich had the lowest at \$155 per capita. There was a clear south to north gradient with lower per capita expenditures in the urban south and higher per capita expenditures in the rural north.

Vancouver Island HA		Per capita expenditures
		\$169
64	Gulf Islands	\$159
63	Saanich	\$155
69	Qualicum	\$162
62	Sooke	\$166
65	Cowichan	\$164
66	Lake Cowichan	\$160
71	Courtenay	\$159
68	Nanaimo	\$158
61	Greater Victoria	\$172
72	Campbell River	\$189
67	Ladysmith	\$196
70	Alberni	\$183
85	Island North	\$232
84	Island West	\$182

LHAs ordered by PMR

In 2000/01 expenditures on general practice services in British Columbia were approximately \$665 million or \$164 per capita. This includes payments made through the Medical Service Plan fee-for-service system, the Alternative Payments Program and primary health care organizations.

Expenditures in the Interior Health Authority totalled \$116 million or \$169 per capita. Age-standardized expenditures were \$166 per capita.

The local health area of Merritt had the highest age-standardized expenditures at \$263 per capita, and Windermere had the lowest at \$141 per capita. As noted in previous profiles, Merritt had the second highest socioeconomic risk rank in the province as well as a high premature mortality rate (4.18 compared to the provincial average of 2.81), indicating a higher need for primary health care services.

Interior HA		Per capita expenditures
		\$166
23	Central Okanagan	\$152
4	Windermere	\$141
13	Kettle Valley	\$146
77	Summerland	\$161
20	Salmon Arm	\$147
14	South Okanagan	\$178
6	Kootenay Lake	\$155
1	Fernie	\$197
21	Armstrong-Spall.	\$150
22	Vernon	\$172
15	Penticton	\$159
5	Creston	\$176
7	Nelson	\$172
26	North Thompson	\$184
2	Cranbrook	\$185
30	South Cariboo	\$163
10	Arrow Lakes	\$209
12	Grand Forks	\$184
9	Castlegar	\$161
16	Keremeos	\$164
24	Kamloops	\$158
3	Kimberley	\$157
17	Princeton	\$201
27	Cariboo-Chilcotin	\$155
19	Revelstoke	\$175
29	Lillooet	\$215
25	100 Mile House	\$195
11	Trail	\$176
18	Golden	\$174
78	Enderby	\$205
31	Merritt	\$263

LHAs ordered by PMR

Sources: PURRFECT 8.1; Out-of-province payment data; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 27, BC Stats
Year: 2000/01

In 2000/01 expenditures on general practice services in British Columbia were approximately \$665 million or \$164 per capita. This includes payments made through the Medical Service Plan fee-for-service system, the Alternative Payments Program and primary health care organizations.

Expenditures in the Northern Health Authority totalled \$54 million or \$179 per capita. Age-standardized expenditures were \$196 per capita. As noted in previous profiles, Northern has the highest premature mortality rate in the province and higher than average socioeconomic risk. Both of these measures suggest a higher than average need for primary health care services.

The local health area of Nisga'a had the highest age-standardized expenditures of any local health area in the province, at \$475 per capita. The combined LHAs of Snow Country, Stikine and Telegraph Creek recorded expenditures of \$420 per capita. The majority of expenditures in these areas are through the APP. The local health area of Prince George recorded the lowest expenditures of \$166 per capita, close to the provincial average.

Northern HA		Per capita expenditures
		\$196
54	Smithers	\$208
60	Peace River North	\$176
80	Kitimat	\$246
53	Upper Skeena	\$315
57	Prince George	\$166
55	Burns Lake	\$215
88	Terrace	\$217
28	Quesnel	\$178
59	Peace River South	\$187
56	Nechako	\$172
52	Prince Rupert	\$239
81	Fort Nelson	\$243
50	Queen Charlotte	\$302
51/87/94	Snow C./Stik./Tel. Ck.	\$420
92	Nisga'a	\$475

LHAs ordered by PMR

LHA (ordered by PMR)	FTEs	BC average
Fraser HA	7.3	8.7
37 Delta	9.7	
202 S. Surrey/White Rock	8.1	
43 Coquitlam	7.3	
41 Burnaby	6.8	
201 Surrey	5.9	
34 Abbotsford	7.0	
35 Langley	7.8	
42 Maple Ridge	7.4	
33 Chilliwack	8.5	
76 Agassiz-Harrison	4.1	
75 Mission	9.4	
40 New Westminster	8.6	
32 Hope	8.0	
Vancouver Coastal HA	9.7	
45 West Vancouver	8.2	
164 Vanc. Westside	9.6	
38 Richmond	7.5	
166 Vanc. South	8.8	
44 North Vancouver	8.4	
163 Vanc. North East	6.3	
165 Vanc. Midtown	9.1	
48 Howe Sound	10.9	
47 Powell River	10.8	
46 Sunshine Coast	9.4	
161 Vanc. City Centre	19.4	
49/83 Bella Coola/Ctrl Coast	18.5	
162 Vanc. Dntn Eastside	11.2	
Vancouver Island HA	9.3	
64 Gulf Islands	8.2	
63 Saanich	9.2	
69 Qualicum	6.9	
62 Sooke	6.6	
65 Cowichan	9.5	
66 Lake Cowichan	7.2	
71 Courtenay	9.0	
68 Nanaimo	8.9	
61 Greater Victoria	10.8	
72 Campbell River	10.5	
67 Ladysmith	9.9	
70 Alberni	9.5	
85 Island North	8.4	
84 Island West	0.5	
Interior HA	8.8	
23 Central Okanagan	8.2	
4 Windermere	7.1	
13 Kettle Valley	5.5	
77 Summerland	10.5	
20 Salmon Arm	8.2	
14 South Okanagan	8.4	
6 Kootenay Lake	5.7	
1 Fernie	10.1	
21 Armstrong-Spall.	6.0	
22 Vernon	9.4	
15 Penticton	9.6	
5 Creston	8.7	
7 Nelson	8.7	
26 North Thompson	9.1	
2 Cranbrook	12.1	
30 South Cariboo	7.4	
10 Arrow Lakes	9.4	
12 Grand Forks	6.9	
9 Castlegar	9.0	
16 Keremeos	6.0	
24 Kamloops	7.9	
3 Kimberley	9.0	
17 Princeton	11.9	
27 Cariboo-Chilcotin	8.7	
19 Revelstoke	9.4	
29 Lillooet	12.6	
25 100 Mile House	9.9	
11 Trail	10.9	
18 Golden	10.0	
78 Enderby	12.3	
31 Merritt	9.5	
Northern HA	9.4	
54 Smithers	12.0	
60 Peace River North	7.3	
80 Kitimat	9.1	
53 Upper Skeena	15.3	
57 Prince George	9.0	
55 Burns Lake	6.4	
88 Terrace	9.1	
28 Quesnel	9.2	
59 Peace River South	8.8	
56 Nechako	7.7	
52 Prince Rupert	12.1	
81 Fort Nelson	9.1	
50 Queen Charlotte	14.8	
51/87/94 Snow C./Stik./Tel. Ck.	20.1	
92 Nisga'a	20.9

Source: MSP practitioner file; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 28, BC Stats
Year: 2000/01

General practice providers are pivotal to the provision of primary health care. There were an estimated 3,852 general practice providers or 3,558 FTE general practice providers in British Columbia in 2000/01, resulting in a rate of 8.7 FTE general practice providers per 10,000 population.

There was variation in the number of FTE general practice providers between health authorities, health service delivery areas, and local health areas across the province. The highest rate was recorded for Vancouver Coastal Health Authority (9.7 per 10,000), while the Fraser Health Authority had the lowest rate at 7.3 per 10,000. No other health authority recorded a rate below the BC average of 8.7 per 10,000. Across local health areas, there was a wide gap between the highest and lowest rates, with the highest estimated rates in Nisga'a (20.9), the combined local health areas of Snow Country/Stikine/Telegraph Creek (20.1), and Vancouver City Centre (19.4). The local health area of Island West recorded the lowest rate of 0.5 per 10,000.

Source: MSP practitioner file; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 28, BC Stats
Year: 2000/01

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General practice providers are pivotal to the provision of primary health care. There were 3,852 general practice providers or 3,558 FTE general practice providers in British Columbia in 2000/01, resulting in a rate of 8.7 FTE general practice providers per 10,000 population.

There were an estimated 947 general practice providers or 1,000 FTE general practice providers in the Fraser Health Authority in 2000/01. The age/sex-standardized rate of FTE general practice providers was 7.3 per 10,000 population. Higher rates were evident in the local health areas of Delta and Mission, while lower rates were noted in Agassiz-Harrison and Surrey.

Fraser HA		FTE rate per 10,000 pop.
		7.3
37	Delta	9.7
202	S. Surrey/White Rock	8.1
43	Coquitlam	7.3
41	Burnaby	6.8
201	Surrey	5.9
34	Abbotsford	7.0
35	Langley	7.8
42	Maple Ridge	7.4
33	Chilliwack	8.5
76	Agassiz-Harrison	4.1
75	Mission	9.4
40	New Westminster	8.6
32	Hope	8.0

LHAs ordered by PMR

Source: MSP practitioner file; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 28, BC Stats
Year: 2000/01

General practice providers are pivotal to the provision of primary health care. There were 3,852 general practice providers or 3,558 FTE general practice providers in British Columbia in 2000/01, resulting in a rate of 8.7 FTE general practice providers per 10,000 population.

There were an estimated 1,193 general practice providers or 998 FTE general practice providers in the Vancouver Coastal Health Authority in 2000/01. The age/sex-standardized rate of FTE general practice providers was 9.7 per 10,000 population. The local health area of Vancouver City Centre recorded the third highest rate in the province at 19.4 FTE general practice providers per 10,000. Relatively high rates were also evident for the combined local health areas of Bella Coola/Central Coast (18.5 per 10,000), largely due to the estimated supply of Alternative Payments Program-funded general practice providers in these areas. The lowest rate was reported for the local health area of Vancouver North East (6.3 per 10,000).

Vancouver Coastal HA		FTE rate per 10,000 pop.
		9.7
45	West Vancouver	8.2
164	Vanc. Westside	9.6
38	Richmond	7.5
166	Vanc. South	8.8
44	North Vancouver	8.4
163	Vanc. North East	6.3
165	Vanc. Midtown	9.1
48	Howe Sound	10.9
47	Powell River	10.8
46	Sunshine Coast	9.4
161	Vanc. City Centre	19.4
49/83	Bella Coola/Ctrl Coast	18.5
162	Vanc. Dntn Eastside	11.2

LHAs ordered by PMR

Source: MSP practitioner file; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 28, BC Stats
Year: 2000/01

General practice providers are pivotal to the provision of primary health care. There were 3,852 general practice providers or 3,558 FTE general practice providers in British Columbia in 2000/01, resulting in a rate of 8.7 FTE general practice providers per 10,000 population.

There were an estimated 769 general practice providers or 677 FTE general practice providers in the Vancouver Island Health Authority in 2000/01. The age/sex-standardized rate of FTE general practice providers was 9.3 per 10,000 population. Relatively high rates were evident for the local health areas of Greater Victoria (10.8 per 10,000) and Campbell River (10.5 per 10,000). The lowest rate in the province was recorded for the local health area of Island West (0.5 per 10,000).

Vancouver Island HA		FTE rate per 10,000 pop.
		9.3
64	Gulf Islands	8.2
63	Saanich	9.2
69	Qualicum	6.9
62	Sooke	6.6
65	Cowichan	9.5
66	Lake Cowichan	7.2
71	Courtenay	9.0
68	Nanaimo	8.9
61	Greater Victoria	10.8
72	Campbell River	10.5
67	Ladysmith	9.9
70	Alberni	9.5
85	Island North	8.4
84	Island West	0.5
LHAs ordered by PMR

Source: MSP practitioner file; Alternative Payments Program; Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 28, BC Stats Year: 2000/01

General practice providers are pivotal to the provision of primary health care. There were 3,852 general practice providers or 3,558 FTE general practice providers in British Columbia in 2000/01, resulting in a rate of 8.7 FTE general practice providers per 10,000 population.

There were an estimated 660 general practice providers or 621 FTE general practice providers in the Interior Health Authority in 2000/01. The age/sex-standardized rate of FTE general practice providers was 8.8 per 10,000 population. Relatively high rates were evident for the local health areas of Lillooet (12.6 per 10,000), Enderby (12.3 per 10,000), and Cranbrook (12.1 per 10,000). Lower rates were noted in Kettle Valley (5.5 per 10,000) and Kootenay Lake (5.7 per 10,000).

Interior HA		FTE rate per 10,000 pop.
		8.8
23	Central Okanagan	8.2
4	Windermere	7.1
13	Kettle Valley	5.5
77	Summerland	10.5
20	Salmon Arm	8.2
14	South Okanagan	8.4
6	Kootenay Lake	5.7
1	Fernie	10.1
21	Armstrong-Spall.	6.0
22	Vernon	9.4
15	Penticton	9.6
5	Creston	8.7
7	Nelson	8.7
26	North Thompson	9.1
2	Cranbrook	12.1
30	South Cariboo	7.4
10	Arrow Lakes	9.4
12	Grand Forks	6.9
9	Castlegar	9.0
16	Keremeos	6.0
24	Kamloops	7.9
3	Kimberley	9.0
17	Princeton	11.9
27	Cariboo-Chilcotin	8.7
19	Revelstoke	9.4
29	Lillooet	12.6
25	100 Mile House	9.9
11	Trail	10.9
18	Golden	10.0
78	Enderby	12.3
31	Merritt	9.5
LHAs ordered by PMR

General practice providers are pivotal to the provision of primary health care. There were 3,852 general practice providers or 3,558 FTE general practice providers in British Columbia in 2000/01, resulting in a rate of 8.7 FTE general practice providers per 10,000 population.

There were an estimated 277 general practice providers or 259 FTE general practice providers in the Northern Health Authority in 2000/01. The age/sex-standardized rate of FTE general practice providers was 9.4 per 10,000 population. Relatively high rates were evident for the local health area of Nisga'a (20.9 per 10,000) and the combined local health areas of Snow Country/Stikine/Telegraph Creek (20.1 per 10,000), largely due to the estimated supply of Alternative Payments Program-funded general practice providers in these areas. Lower rates were evident for the local health areas of Burns Lake (6.4 per 10,000) and Peace River North (7.3 per 10,000).

Northern HA		FTE rate per 10,000 pop.
		9.4
54	Smithers	12.0
60	Peace River North	7.3
80	Kitimat	9.1
53	Upper Skeena	15.3
57	Prince George	9.0
55	Burns Lake	6.4
88	Terrace	9.1
28	Quesnel	9.2
59	Peace River South	8.8
56	Nechako	7.7
52	Prince Rupert	12.1
81	Fort Nelson	9.1
50	Queen Charlotte	14.8
51/87/94	Snow C./Stik./Tel. Creek	20.1
92	Nisga'a	20.9

LHAs ordered by PMR

Source: MSP practitioner and billing files, BC Ministry of Health Services; 2001 Census, Statistics Canada
Year: 2001/02

The geographic location of general practice providers was determined using type of practice methodology to identify general practice providers by MSP billing address for 2001/02. Provider location is mapped by six-digit postal code, not local health area. Representative circles are sized according to the number of general practice providers with billing addresses at the postal code. This location data is overlaid on a population density map to allow comparison of population clusters with the location of general practice providers.

This map does not include providers funded through the Alternative Payments Program (APP) or primary health care organizations (PHCOs). For this reason, this map should be viewed in the context of the *Supply of General Practice Providers* profile, which details the number of full-time equivalent providers per 10,000 population and includes APP and PHCO data.

Fraser HA	Number of providers
Fraser HA	975
37 Delta	84
202 S. Surrey/White Rock	74
43 Coquitlam	132
41 Burnaby	144
201 Surrey	164
34 Abbotsford	74
35 Langley	75
42 Maple Ridge	53
33 Chilliwack	68
76 Agassiz-Harrison	5
75 Mission	34
40 New Westminster	58
32 Hope	10

Source: MSP practitioner and billing files, BC Ministry of Health Services; 2001 Census, Statistics Canada
Year: 2001/02

The geographic location of general practice providers was determined using type of practice methodology to identify general practice providers by MSP billing address for 2001/02. Provider location is mapped by the town or city identified in the billing address for the more rural areas shown in the main map; and by six-digit postal code on the inset map covering Richmond, Vancouver, North Vancouver, and West Vancouver. This location data is overlaid on a population density map to allow comparison of population clusters with the location of general practice providers.

This map does not include providers funded through the Alternative Payments Program (APP) or primary health care organizations (PHCOs). For this reason, this map should be viewed in the context of the *Supply of General Practice Providers* profile, which details the number of full-time equivalent providers per 10,000 population and includes APP and PHCO data.

The geographic location of general practice providers was determined using type of practice methodology to identify general practice providers by MSP billing address for 2001/02. Provider location is mapped by the town or city identified in the billing address for the more rural areas shown in the main map; and by six-digit postal code on the inset maps of Victoria and Nanaimo. This location data is overlaid on a population density map to allow comparison of population clusters with the location of general practice providers.

This map does not include providers funded through the Alternative Payments Program (APP) or primary health care organizations (PHCOs). For this reason, this map should be viewed in the context of the *Supply of General Practice Providers* profile, which details the number of full-time equivalent providers per 10,000 population and includes APP and PHCO data.

The geographic location of general practice providers was determined using type of practice methodology to identify general practice providers by MSP billing address for 2001/02. Provider location is mapped by the town or city identified in the billing address for the more rural areas shown in the main map; and by six-digit postal code on the inset maps of Vernon, Penticton, Kamloops and Kelowna. This location data is overlaid on a population density map to allow comparison of population clusters with the location of general practice providers.

This map does not include providers funded through the Alternative Payments Program (APP) or primary health care organizations (PHCOs). For this reason, this map should be viewed in the context of the *Supply of General Practice Providers* profile, which details the number of full-time equivalent providers per 10,000 population and includes APP and PHCO data.

Source: MSP practitioner and billing files, BC Ministry of Health Services; 2001 Census, Statistics Canada
Year: 2001/02

The geographic location of general practice providers was determined using type of practice methodology to identify general practice providers by MSP billing address for 2001/02. Provider location is mapped by the town or city identified in the billing address for the more rural areas shown in the main map; and by six-digit postal code on the inset map of Prince George. This location data is overlaid on a population density map to allow comparison of population clusters with the location of general practice providers.

This map does not include providers funded through the Alternative Payments Program (APP) or primary health care organizations (PHCOs). In the Northern Health Authority, 10% of expenditures on general practice services were paid through APP in 2000/01, compared to only 1.8% for the province as a whole. For this reason, this map should be viewed in the context of the *Supply of General Practice Providers* profile, which details the number of full-time equivalent providers per 10,000 population and includes APP and PHCO data.

Chapter 5: Primary Health Care Outputs - PHC and Related Services

PHC outputs represent the interface between British Columbians and care providers. This interface is often described as “access to health care”. Access has a number of different dimensions that relate to the process of obtaining care—availability, geographic proximity to care, affordability—and the receipt of certain types of care.

Profiles in this section provide information on the patterns of use and delivery of primary health care and related services. The accessibility of primary health care is measured as the amount of general practice services people receive in their own or a geographically adjacent local health area. Information is also provided on the use of emergency rooms, home-based professional services and home support services.

The delivery of recommended services to people with diabetes and congestive heart failure are profiled; and juxtaposed with information regarding the prevalence of these health conditions. These profiles provide a glimpse at the technical effectiveness of general practice services, which refers to how providers select and use efficacious or recommended clinical tests, treatments and/or services for particular patients. This concept has also been popularized as evidence-based care¹⁶ and includes care otherwise considered legitimate by contemporary professional standards.

This section contains profiles of:

PROFILE	DATA	SOURCE*	AVAILABLE
Access to general practice services (percentage of MSP-funded general practice services received in home or geographically-adjacent local health area)	2001/02	CHSPR (new analysis)	p. 55-62
Emergency room visits (rate per 1,000 population)	1999	CHSPR	p. 63-70
Home-based professional services (nursing, physiotherapy, and occupational therapy visits per 1,000 population)	2001/02	BC Ministry of Health Services	p. 71-78
Home support services (hours per 1,000 population)	2001/02	BC Ministry of Health Services	p. 79-86
Diabetes (prevalence and receipt of recommended services)	2001/02	BC Chronic Disease Management	p. 87-94
Congestive heart failure (prevalence and receipt of recommended services)	2001/02	BC Chronic Disease Management	p. 95-101

A number of profiles relevant to PHC contexts are also available in the *BC Health Atlas (2nd ed.)*:

- [Home support users](#) (2000/01)
- [Continuity of physician care](#) (2000/01)

*For full details of profile methodology and data sources, refer to Definitions and technical notes.

Geographic access to general practice services was determined by calculating the percentage of services that patients received in either their own or a geographically adjacent local health area. Data were obtained from PURRFECT 8.1 (MSP fee-for-service expenditures) using fee item specialty methodology. Payments made through the Alternative Payments Program or primary health care organizations were not included. Local health areas where more than 10% of general practice services were provided outside the fee-for-service system were excluded. In British Columbia in 2001/02, 84% of MSP-funded general practice services were provided in patients' own or adjacent local health area.

Percentage of services received in home/adjacent LHA

56

Source: PURRFECT 8.1, BC Ministry of Health Services
Year: 2001/02

● Individual LHA value
▶ Overall HA value

LHA (ordered by PMR) % of services BC overall

Fraser HA 79% 84%

Vancouver Coastal HA 80%

Vancouver Island HA 90%

Interior HA 92%

Northern HA 92%

* LHA where >10% of general practice services are funded outside of MSP

Geographic access to general practice services describes the percentage of care that patients received in either their own or a geographically adjacent local health area. In British Columbia in 2001/02, 65% of MSP-funded general practice services were provided to patients in their own local health area and an additional 19% in an adjacent area. Overall, 84% of MSP-funded general practice services were provided in patients' own or an adjacent local health area.

Residents of the Fraser and Vancouver Coastal health authorities received 79% of general practice services in their own or an adjacent local health area. Residents of Vancouver Island, Northern and Interior health authorities received 90%, 91% and 92%, respectively, of general practice services in their own or an adjacent local health area. With the exception of Fraser North, Fraser South, Vancouver and Richmond health service delivery areas, residents of all other health service delivery areas received 85% or more of general practice services in their own or an adjacent local health area.

Source: PURRFECT 8.1, BC Ministry of Health Services
Year: 2001/02

Source: PURRFECT 8.1, BC Ministry of Health Services
Year: 2001/02

Geographic access to general practice services describes the percentage of care that patients received in either their own or a geographically adjacent local health area. In British Columbia in 2001/02, 84% of MSP-funded general practice services were provided in patients' own or an adjacent local health area.

Residents of the Fraser Health Authority received 79% of general practice services in their own or an adjacent local health area. Across local health areas, residents of Burnaby (71%) and New Westminster (73%) received the lowest percentage of general practice services in their own or an adjacent area. By comparison, residents of Chilliwack local health area had the highest level of geographic access, with 89% receiving general practice services in their own or adjacent areas.

Fraser HA		% of services
		79%
37	Delta	77%
43	Coquitlam	80%
41	Burnaby	71%
201/202	Surrey/S. Surrey	79%
34	Abbotsford	85%
35	Langley	83%
42	Maple Ridge	84%
33	Chilliwack	89%
76	Agassiz-Harrison	85%
75	Mission	81%
40	New Westminster	73%
32	Hope	85%

LHAs ordered by PMR

Source: PURRFECT 8.1, BC Ministry of Health Services
Year: 2001/02

Geographic access to general practice services describes the percentage of care that patients received in either their own or a geographically adjacent local health area. In British Columbia in 2001/02, 84% of MSP-funded general practice services were provided in patients' own or an adjacent local health area.

Residents of the Vancouver Coastal Health Authority received 80% of general practice services in their own or an adjacent local health area. Across local health areas, residents of Vancouver South (68%) and Vancouver North East (70%) received the lowest percentage of general practice services in their own or an adjacent area. By comparison, residents of Vancouver Westside and North Vancouver local health areas had the highest levels of geographic access, with 88% and 87%, respectively, receiving general practice services in their own or adjacent areas. Bella Coola, Central Coast and Vancouver Downtown Eastside local health areas were excluded as more than 10% of their general practice services were provided outside the fee-for-service system.

Vancouver Coastal HA		% of services
45	West Vancouver	85%
164	Vanc. Westside	88%
38	Richmond	81%
166	Vanc. South	68%
44	North Vancouver	87%
163	Vanc. North East	70%
165	Vanc. Midtown	86%
48	Howe Sound	84%
47	Powell River	87%
46	Sunshine Coast	82%
161	Vanc. City Centre	77%
49	Bella Coola*	
83	Central Coast*	
162	Vanc. Dntn Eastside*	

* LHA where >10% of general practice services are funded outside of MSP
LHAs ordered by PMR

Geographic access to general practice services describes the percentage of care that patients received in either their own or a geographically adjacent local health area. In British Columbia in 2001/02, 84% of MSP-funded general practice services were provided in patients' own or an adjacent local health area.

Residents of the Vancouver Island Health Authority received 90% of general practice services in their own or an adjacent local health area. Across local health areas, residents of Island West (52%) and Gulf Islands (72%) received the lowest percentage of general practice services in their own or an adjacent area. By comparison, residents of Sooke and Saanich local health areas had the highest levels of geographic access, with 96% and 95%, respectively, receiving general practice services in their own or adjacent areas.

Vancouver Island HA		% of services
64	Gulf Islands	72%
63	Saanich	95%
69	Qualicum	76%
62	Sooke	96%
65	Cowichan	83%
66	Lake Cowichan	87%
71	Courtenay	90%
68	Nanaimo	89%
61	Greater Victoria	94%
72	Campbell River	90%
67	Ladysmith	91%
70	Alberni	89%
85	Island North	75%
84	Island West	52%
LHAs ordered by PMR

Geographic access to general practice services describes the percentage of care that patients received in either their own or a geographically adjacent local health area. In British Columbia in 2001/02, 84% of MSP-funded general practice services were provided in patients' own or an adjacent local health area.

Residents of the Interior Health Authority received 92% of general practice services in their own or an adjacent local health area—the highest level in the province. Across local health areas, residents of Kettle Valley (76%) and Kootenay Lake (78%) received the lowest percentage of general practice services in their own or an adjacent area. By comparison, residents of Summerland and Enderby local health areas had the highest level of geographic access, with both receiving 96% of general practice services in their own or adjacent areas. Five other local health areas had similar levels of geographic access, with 95% of residents receiving general practice services in their own or adjacent areas. Fernie local health area was excluded as more than 10% of its general practice services were provided outside the fee-for-service system.

Interior HA		% of services
		92%
23	Central Okanagan	95%
4	Windermere	91%
13	Kettle Valley	76%
77	Summerland	96%
20	Salmon Arm	94%
14	South Okanagan	92%
6	Kootenay Lake	78%
1	Fernie*	
21	Armstrong-Spall.	95%
22	Vernon	95%
15	Penticton	95%
5	Creston	93%
7	Nelson	85%
26	North Thompson	83%
2	Cranbrook	95%
30	South Cariboo	83%
10	Arrow Lakes	80%
12	Grand Forks	83%
9	Castlegar	89%
16	Keremeos	90%
24	Kamloops	92%
3	Kimberley	94%
17	Princeton	87%
27	Cariboo-Chilcotin	88%
19	Revelstoke	88%
29	Lillooet	84%
25	100 Mile House	85%
11	Trail	94%
18	Golden	88%
78	Enderby	96%
31	Merritt	92%

* LHA where >10% of general practice services are funded outside of MSP
LHAs ordered by PMR

Source: PURRFECT 8.1, BC Ministry of Health Services
Year: 2001/02

62

Geographic access to general practice services describes the percentage of care that patients received in either their own or a geographically adjacent local health area. In British Columbia in 2001/02, 84% of MSP-funded general practice services were provided in patients' own or an adjacent local health area.

Geographic access was not calculated for six of the 17 local health areas in Northern Health Authority as more than 10% of their general practice services were provided outside the fee-for-service system. Residents in local health areas where geographic access could be measured received 92% of general practice services in their own or a geographically adjacent local health area. Residents of Peace River North, Peace River South, and Quesnel local health areas had the highest level of geographic access, with 95%, 94% and 93%, respectively, receiving general practice services in their own or adjacent areas.

Northern HA		% of services
92%		
54	Smithers	90%
60	Peace River North	95%
80	Kitimat	91%
53	Upper Skeena*	
57	Prince George	93%
55	Burns Lake	85%
88	Terrace	91%
28	Quesnel	93%
87	Stikine*	
59	Peace River South	94%
56	Nechako	87%
52	Prince Rupert	86%
81	Fort Nelson	87%
50	Queen Charlotte*	
92	Nisga'a*	
51	Snow Country*	
94	Telegraph Creek*	

* LHA where >10% of general practice services are funded outside of MSP

LHAs ordered by PMR

LHA (ordered by PMR)	ER visits	BC average
Fraser HA 261		275
37 Delta	266	
43 Coquitlam	249	
41 Burnaby	228	
201/202 Surrey/S. Surrey	246	
34 Abbotsford	282	
35 Langley	257	
42 Maple Ridge	264	
33 Chilliwack	330	
76 Agassiz-Harrison	237	
75 Mission	365	
40 New Westminster	283	
32 Hope	422	
Vancouver Coastal HA 238		
45 West Vancouver	168	
164 Vanc. Westside	—	
38 Richmond	185	
166 Vanc. South	—	
44 North Vancouver	205	
163 Vanc. North East	—	
165 Vanc. Midtown	—	
48 Howe Sound	368	
47 Powell River	741	
46 Sunshine Coast	311	
161 Vanc. City Centre	—	
49 Bella Coola	—	
83 Central Coast	—	
162 Vanc. Dntn Eastside	—	
Vancouver Island HA 277		
64 Gulf Islands	173	
63 Saanich	251	
69 Qualicum	147	
62 Sooke	195	
65 Cowichan	379	
66 Lake Cowichan	299	
71 Courtenay	325	
68 Nanaimo	284	
61 Greater Victoria	237	
72 Campbell River	421	
67 Ladysmith	418	
70 Alberni	335	
85 Island North	453	
84 Island West	445	
Interior HA 290		
23 Central Okanagan	237	
4 Windermere	234	
13 Kettle Valley	165	
77 Summerland	214	
20 Salmon Arm	302	
14 South Okanagan	325	
6 Kootenay Lake	108	
1 Fernie	260	
21 Armstrong-Spall.	212	
22 Vernon	293	
15 Penticton	243	
5 Creston	275	
7 Nelson	244	
26 North Thompson	362	
2 Cranbrook	379	
30 South Cariboo	200	
10 Arrow Lakes	324	
12 Grand Forks	358	
9 Castlegar	208	
16 Keremeos	290	
24 Kamloops	307	
3 Kimberley	297	
17 Princeton	389	
27 Cariboo-Chilcotin	566	
19 Revelstoke	316	
29 Lillooet	291	
25 100 Mile House	307	
11 Trail	278	
18 Golden	396	
78 Enderby	296	
31 Merritt	376	
Northern HA 359		
54 Smithers	315	
60 Peace River North	412	
80 Kitimat	313	
53 Upper Skeena	—	
57 Prince George	394	
55 Burns Lake	394	
88 Terrace	403	
28 Quesnel	310	
87 Stikine	83	
59 Peace River South	385	
56 Nechako	265	
52 Prince Rupert	473	
81 Fort Nelson	288	
50 Queen Charlotte	76	
92 Nisga'a	209	
51 Snow Country	107	
94 Telegraph Creek	178	

EMERGENCY ROOM VISITS

HEALTH SERVICE DELIVERY AREAS

While primary health care services for non-urgent conditions can occur in community settings, urgent and life-threatening care is most appropriately provided in emergency rooms. The challenge for primary health care planners is to ensure that non-urgent care seekers are deterred from using emergency service locations.

In British Columbia, there were 275 emergency room visits per 1,000 population in 1998/99. There was significant variation in visit rates between health authorities, health service delivery areas and local health areas. Northern Health Authority had the highest rate of visits (359 per 1,000) and Vancouver Coastal Health Authority had the lowest (238 per 1,000). Across local health areas, Powell River had the highest rate (741 visits per 1,000) and Queen Charlotte had the lowest (76 visits per 1,000).

Source: Medical Services Plan payment data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 1998/99

Source: Medical Services Plan payment data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 1998/99

66

Fraser Health Authority reported 261 emergency room visits per 1,000 population in 1998/99, compared to the provincial average of 275 visits per 1,000. Lower rates were evident in the western local health areas of Burnaby, Coquitlam, Maple Ridge, Delta, Surrey and Langley. Higher rates were evident in the eastern local health areas of Hope and Mission. The neighbouring eastern local health area of Agassiz-Harrison, however, recorded one of the lowest rates of emergency room use.

Fraser HA		ER visits per 1,000 pop.
201/202		261
37	Delta	266
43	Coquitlam	249
41	Burnaby	228
201/202	Surrey/S. Surrey	246
34	Abbotsford	282
35	Langley	257
42	Maple Ridge	264
33	Chilliwack	330
76	Agassiz-Harrison	237
75	Mission	365
40	New Westminster	283
32	Hope	422
LHAs ordered by PMR

Source: Medical Services Plan payment data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 1998/99

Vancouver Coastal Health Authority reported 238 emergency room visits per 1,000 population in 1998/99, compared to the provincial average of 275 visits per 1,000. Eight local health areas (Bella Coola, Central Coast, and all six of Vancouver's local health areas) were excluded from analysis because emergency rooms at Bella Coola General (Bella Coola), R.W. Large Memorial (Central Coast), Vancouver General (Vancouver Midtown), and St. Paul's (Vancouver Centre) hospitals are staffed by salaried physicians who do not bill to MSP.

Lower visit rates were reported in the local health areas of Richmond (185 visits per 1,000) and West Vancouver-Bowen Island (168 visits per 1,000). By comparison, the local health area of Powell River recorded a visit rate of 741 per 1,000—almost three times the provincial average.

Vancouver Coastal HA		ER visits per 1,000 pop.
Vancouver Coastal HA		238
45	West Vancouver	168
164	Vanc. Westside	—
38	Richmond	185
166	Vanc. South	—
44	North Vancouver	205
163	Vanc. North East	—
165	Vanc. Midtown	—
48	Howe Sound	368
47	Powell River	741
46	Sunshine Coast	311
161	Vanc. City Centre	—
49	Bella Coola	—
83	Central Coast	—
162	Vanc. Dntn Eastside	—

LHAs ordered by PMR

Source: Medical Services Plan payment data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 1998/99

68 Vancouver Island Health Authority reported 277 emergency room visits per 1,000 population in 1998/99, compared to the provincial average of 275 visits per 1,000. There was a three-fold variation in visit rates for the local health areas in this health authority. Lower visit rates were evident for the local health areas of Gulf Islands and Qualicum. Higher rates were recorded for the northern local health areas of Island North, Island West, and Campbell River, as well as Cowichan and Ladysmith.

Vancouver Island HA		ER visits per 1,000 pop.
		277
64	Gulf Islands	173
63	Saanich	251
69	Qualicum	147
62	Sooke	195
65	Cowichan	379
66	Lake Cowichan	299
71	Courtenay	325
68	Nanaimo	284
61	Greater Victoria	237
72	Campbell River	421
67	Ladysmith	418
70	Alberni	335
85	Island North	453
84	Island West	445

LHAs ordered by PMR

Interior Health Authority reported 290 emergency room visits per 1,000 population in 1998/99, compared to the provincial average of 275 visits per 1,000. There was a five-fold variation in visit rates for the local health areas in this health authority. Lower visit rates were evident for the local health areas of Kettle Valley and Kootenay Lake. Higher rates were recorded for the local health areas of Cariboo-Chilcotin, Golden, Princeton, Cranbrook, Grand Forks, Merritt and North Thompson.

Interior HA		ER visits per 1,000 pop.
		290
23	Central Okanagan	237
4	Windermere	234
13	Kettle Valley	165
77	Summerland	214
20	Salmon Arm	302
14	South Okanagan	325
6	Kootenay Lake	108
1	Fernie	260
21	Armstrong-Spall.	212
22	Vernon	293
15	Penticton	243
5	Creston	275
7	Nelson	244
26	North Thompson	362
2	Cranbrook	379
30	South Cariboo	200
10	Arrow Lakes	324
12	Grand Forks	358
9	Castlegar	208
16	Keremeos	290
24	Kamloops	307
3	Kimberley	297
17	Princeton	389
27	Cariboo-Chilcotin	566
19	Revelstoke	316
29	Lillooet	291
25	100 Mile House	307
11	Trail	278
18	Golden	396
78	Enderby	296
31	Merritt	376

LHAs ordered by PMR

Source: Medical Services Plan payment data, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 1998/99

70

Northern Health Authority reported 359 emergency room visits per 1,000 population in 1998/99, compared to the provincial average of 275 visits per 1,000. The local health area of Upper Skeena was excluded from analysis because the emergency room at Wrinch Memorial Hospital in Hazelton (Upper Skeena) is staffed by salaried physicians who do not bill to MSP.

Lower visit rates are evident for the remote local health areas where populations are more removed from emergency rooms: Snow Country, Telegraph Creek, Stikine and Queen Charlotte. Higher rates are evident for the local health areas of Prince Rupert, Prince George, Terrace, Burns Lake, Peace River North, and Peace River South.

Northern HA		ER visits per 1,000 pop.
Northern HA		359
54	Smithers	315
60	Peace River North	412
80	Kitimat	313
53	Upper Skeena	—
57	Prince George	394
55	Burns Lake	394
88	Terrace	403
28	Quesnel	310
87	Stikine	83
59	Peace River South	385
56	Nechako	265
52	Prince Rupert	473
81	Fort Nelson	288
50	Queen Charlotte	76
92	Nisga'a	209
51	Snow Country	107
94	Telegraph Creek	178

LHAs ordered by PMR

Utilization of publicly-funded home-based nursing, physiotherapy and occupational therapy is measured as an age-standardized visit rate per 1,000 population. These home-based services could include assessment, treatment, consultation, referral and/or case management. Visits were calculated for each region by counting the number of nursing, physiotherapy and occupational therapy home-based encounters and dividing by the size of the population. Rates were age-standardized using the indirect method and derived from data available from PURRFECT 8.1 for 2001/02. In British Columbia there were 218 home-based professional services visits per 1,000 population in 2001/02.

Home-based professional services: nursing, physiotherapy, and occupational therapy visits per 1,000 population
Age-standardized

- Health Authorities
- Local Health Areas
- Aggregated Local Health Areas (1)

Each circle represents one Local Health Area (LHA)
Classified by natural breaks (Jenks Optimization algorithm)

Sources: PURRFECT 8.1, BC Ministry of Health Service;
PEOPLE 27, BC Stats
Year: 2001/02

Professional services: visits per 1,000 pop.

72

Sources: PURRFACT 8.1, BC Ministry of Health Services;
PEOPLE 27, BC Stats
Year: 2001/02

● Individual LHA value
▲ Overall HA value

LHA (ordered by PMR) Visits BC average

Fraser HA 164 218

37	Delta	127
43	Coquitlam	187
41	Burnaby	228
201/202	Surrey/S. Surrey	130
34	Abbotsford	123
35	Langley	116
42	Maple Ridge	236
33	Chilliwack	185
76	Agassiz-Harrison	205
75	Mission	210
40	New Westminster	218
32	Hope	199

Vancouver Coastal HA 220

45	West Vancouver	116
164	Vanc. Westside	195
38	Richmond	209
166	Vanc. South	185
44	North Vancouver	207
163	Vanc. North East	238
165	Vanc. Midtown	189
48	Howe Sound	222
47	Powell River	228
46	Sunshine Coast	197
161	Vanc. City Centre	233
49	Bella Coola	0
83	Central Coast	32
162	Vanc. Dntn Eastside	633

Vancouver Island HA 221

64	Gulf Islands	234
63	Saanich	189
69	Qualicum	265
62	Sooke	212
65	Cowichan	198
66	Lake Cowichan	280
71	Courtenay	253
68	Nanaimo	242
61	Greater Victoria	198
72	Campbell River	316
67	Ladysmith	194
70	Alberni	237
85	Island North	351
84	Island West	13

Interior HA 275

23	Central Okanagan	197
4	Windermere	219
13	Kettle Valley	366
77	Summerland	337
20	Salmon Arm	291
14	South Okanagan	134
6	Kootenay Lake	136
1	Fernie	241
21	Armstrong-Spall.	162
22	Vernon	319
15	Penticton	241
5	Creston	193
7	Nelson	344
26	North Thompson	713
2	Cranbrook	245
30	South Cariboo	115
10	Arrow Lakes	295
12	Grand Forks	299
9	Castlegar	421
16	Keremeos	191
24	Kamloops	503
3	Kimberley	276
17	Princeton	307
27	Cariboo-Chilcotin	306
19	Revelstoke	64
29	Lillooet	94
25	100 Mile House	173
11	Trail	257
18	Golden	34
78	Enderby	366
31	Merritt	225

Northern HA 351

54	Smithers	299
60	Peace River North	528
80	Kitimat	395
53	Upper Skeena	260
57	Prince George	332
55	Burns Lake	132
88	Terrace	215
28	Quesnel	288
87	Stikine	0
59	Peace River South	494
56	Nechako	453
52	Prince Rupert	416
81	Fort Nelson	391
50	Queen Charlotte	76
92	Nisga'a	0
51	Snow Country	5
94	Telegraph Creek	6

Professional services: BC average
visits per 1,000 pop. 218

HAS and HSDAs ordered by PMR

Sources: PURRFECT 8.1, BC Ministry of Health Services;
PEOPLE 27, BC Stats
Year: 2001/02

Home-based nursing, physiotherapy, and occupational therapy services are often used by patients following discharge from a hospital or by individuals who require assistance to maintain their independence at home.

In British Columbia, there were 218 publicly-funded home-based nursing, physiotherapy and occupational therapy visits per 1,000 population in 2001/02. There was significant variation in visit rates between health authorities, health service delivery areas and local health areas. Northern Health Authority had the highest rate of visits (351 visits per 1,000) and Fraser Health Authority had the lowest (164 visits per 1,000). Across local health areas, there were substantial differences in use of this type of care. People in a number of local health areas, such as Bella Coola, Stikine and Nisga'a, received no home-based services. By comparison, the local health area of North Thompson recorded the highest home-based visit rate in the province with 713 visits per 1,000.

Sources: PURRFECT 8.1, BC Ministry of Health Services; PEOPLE 27, BC Stats
Year: 2001/02

Fraser Health Authority reported 164 home-based nursing, physiotherapy, and occupational therapy visits per 1,000 population in 2001/02—the lowest rate among the health authorities. The provincial average was 218 per 1,000 population. While there was substantial variation in visit rates for local health areas within most other health authorities, there was little variation in rates across regions within Fraser. Lower rates were evident in the western local health areas of Langley, Abbotsford, Surrey and Delta.

Fraser HA		Professional services: visits per 1,000 pop.
Fraser HA		164
37	Delta	127
43	Coquitlam	187
41	Burnaby	228
201/202	Surrey/S. Surrey	130
34	Abbotsford	123
35	Langley	116
42	Maple Ridge	236
33	Chilliwack	185
76	Agassiz-Harrison	205
75	Mission	210
40	New Westminster	218
32	Hope	199

LHAs ordered by PMR

Sources: PURRFECT 8.1, BC Ministry of Health Services; PEOPLE 27, BC Stats
Year: 2001/02

Vancouver Coastal Health Authority reported 220 home-based nursing, physiotherapy, and occupational therapy visits per 1,000 population in 2001/02, compared to the provincial average of 218 visits per 1,000. The Vancouver Downtown Eastside local health area had the second highest rate in the province with 633 visits per 1,000. By comparison, the local health area of Bella Coola received no home-based visits from these professional groups. The majority of local health areas within Vancouver Coastal had visit rates similar to the provincial average.

Professional services: visits per 1,000 pop.	
Vancouver Coastal HA	220
45 West Vancouver	116
164 Vanc. Westside	195
38 Richmond	209
166 Vanc. South	185
44 North Vancouver	207
163 Vanc. North East	238
165 Vanc. Midtown	189
48 Howe Sound	222
47 Powell River	228
46 Sunshine Coast	197
161 Vanc. City Centre	233
49 Bella Coola	0
83 Central Coast	32
162 Vanc. Dntn Eastside	633
LHAs ordered by PMR

Sources: PURRFECT 8.1, BC Ministry of Health Services; PEOPLE 27, BC Stats
Year: 2001/02

Vancouver Island Health Authority reported 221 home-based nursing, physiotherapy, and occupational therapy visits per 1,000 population in 2001/02, compared to the provincial average of 218 visits per 1,000. With the exception of Island West, which reported a visit rate of 13 per 1,000 population, the majority of local health areas within Vancouver Island had visit rates similar to the provincial average.

Professional services: visits per 1,000 pop.	
Vancouver Island HA	221
64 Gulf Islands	234
63 Saanich	189
69 Qualicum	265
62 Sooke	212
65 Cowichan	198
66 Lake Cowichan	280
71 Courtenay	253
68 Nanaimo	242
61 Greater Victoria	198
72 Campbell River	316
67 Ladysmith	194
70 Alberni	237
85 Island North	351
84 Island West	13

LHAs ordered by PMR

Interior Health Authority reported 275 home-based nursing, physiotherapy, and occupational therapy visits per 1,000 population in 2001/02, compared to the provincial average of 218 visits per 1,000. There was substantial variability in visit rates for local health areas within this health authority. Highest rates of use were recorded for the local health areas of North Thompson (713 visits per 1,000) and Kamloops (503 visits per 1,000). Lowest rates of use were evident in Golden (34 visits per 1,000) and Revelstoke (64 visits per 1,000).

Interior HA		275
23	Central Okanagan	197
4	Windermere	219
13	Kettle Valley	366
77	Summerland	337
20	Salmon Arm	291
14	South Okanagan	134
6	Kootenay Lake	136
1	Fernie	241
21	Armstrong-Spall.	162
22	Vernon	319
15	Penticton	241
5	Creston	193
7	Nelson	344
26	North Thompson	713
2	Cranbrook	245
30	South Cariboo	115
10	Arrow Lakes	295
12	Grand Forks	299
9	Castlegar	421
16	Keremeos	191
24	Kamloops	503
3	Kimberley	276
17	Princeton	307
27	Cariboo-Chilcotin	306
19	Revelstoke	64
29	Lillooet	94
25	100 Mile House	173
11	Trail	257
18	Golden	34
78	Enderby	366
31	Merritt	225

LHAs ordered by PMR

Sources: PURRFECT 8.1, BC Ministry of Health Services; PEOPLE 27, BC Stats
Year: 2001/02

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Northern Health Authority reported 351 home-based nursing, physiotherapy, and occupational therapy visits per 1,000 population in 2001/02, compared to the provincial average of 218 visits per 1,000. Highest rates of use were evident for the local health areas of Peace River North (528 visits per 1,000) and Peace River South (494 visits per 1,000). By comparison, residents of Stikine and Nisga'a received no home-based services from these professional groups.

Professional services: visits per 1,000 pop.	
Northern HA	351
54 Smithers	299
60 Peace River North	528
80 Kitimat	395
53 Upper Skeena	260
57 Prince George	332
55 Burns Lake	132
88 Terrace	215
28 Quesnel	288
87 Stikine	0
59 Peace River South	494
56 Nechako	453
52 Prince Rupert	416
81 Fort Nelson	391
50 Queen Charlotte	76
92 Nisga'a	0
51 Snow Country	5
94 Telegraph Creek	6

LHAs ordered by PMR

Home support services are designed to enable individuals with health problems to remain in their own homes for as long as possible. Services include personal assistance with daily activities such as bathing, dressing and grooming, as well as household tasks such as laundry, cleaning and meal preparation. This profile includes only publicly-funded home support services. Utilization of home support hours is measured as an hours rate per 1,000 population. Rates were age-standardized using the indirect method and derived from data available from PURRFECT 8.1 for 2001/02. In British Columbia, the rate of home support utilization was 1,764 hours per 1,000 population in 2001/02.

Home support services:
hours per 1,000 population
Age-standardized

- Health Authorities
- Local Health Areas
- 72/84 Aggregated Local Health Areas (1)

Each circle represents one Local Health Area (LHA)
Classified by natural breaks (Jenks Optimization algorithm)

Sources: PURRFECT 8.1, BC Ministry of Health Services;
PEOPLE 27, BC Stats
Year: 2001/02

Home support services: hours per 1,000 pop.

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Sources: PURRFECT 8.1, BC Ministry of Health Services;
PEOPLE 27, BC Stats
Year: 2001/02

● Individual LHA value
▲ Overall HA value

LHA (ordered by PMR) Hours BC average

Fraser HA 1501 1764

37	Delta	1048
43	Coquitlam	1340
41	Burnaby	1897
201/202	Surrey/S. Surrey	1186
34	Abbotsford	1711
35	Langley	1365
42	Maple Ridge	1485
33	Chilliwack	2142
76	Agassiz-Harrison	552
75	Mission	2363
40	New Westminster	1966
32	Hope	1742

Vancouver Coastal HA 2090

45	West Vancouver	1427
164	Vanc. Westside	1823
38	Richmond	1635
166	Vanc. South	1657
44	North Vancouver	1726
163	Vanc. North East	2179
165	Vanc. Midtown	1651
48	Howe Sound	1646
47	Powell River	2121
46	Sunshine Coast	1609
161	Vanc. City Centre	4466
49	Bella Coola	3149
83	Central Coast	0
162	Vanc. Dntn Eastside	4496

Vancouver Island HA 1827

64	Gulf Islands	1635
63	Saanich	1161
69	Qualicum	1632
62	Sooke	2818
65	Cowichan	1982
66	Lake Cowichan	2467
71	Courtenay	1911
68	Nanaimo	1523
61	Greater Victoria	1859
72	Campbell River	3305
67	Ladysmith	1722
70	Alberni	1554
85	Island North	3734
84	Island West	888

Interior HA 1695

23	Central Okanagan	1004
4	Windermere	1362
13	Kettle Valley	2295
77	Summerland	1420
20	Salmon Arm	1476
14	South Okanagan	1611
6	Kootenay Lake	2073
1	Fernie	1597
21	Armstrong-Spall.	2013
22	Vernon	1536
15	Penticton	1679
5	Creston	2566
7	Nelson	2960
26	North Thompson	1837
2	Cranbrook	2903
30	South Cariboo	1913
10	Arrow Lakes	2252
12	Grand Forks	2853
9	Castlegar	2548
16	Keremeos	1863
24	Kamloops	1607
3	Kimberley	3114
17	Princeton	3825
27	Cariboo-Chilcotin	2151
19	Revelstoke	2882
29	Lillooet	1124
25	100 Mile House	3322
11	Trail	1520
18	Golden	1715
78	Enderby	2972
31	Merritt	1262

Northern HA 1982

54	Smithers	2291
60	Peace River North	1458
80	Kitimat	2467
53	Upper Skeena	1345
57	Prince George	1848
55	Burns Lake	3173
88	Terrace	2077
28	Quesnel	2273
87	Stikine	0
59	Peace River South	1817
56	Nechako	2668
52	Prince Rupert	2118
81	Fort Nelson	724
50	Queen Charlotte	1716
92	Nisga'a	0
51	Snow Country	344
94	Telegraph Creek	0

Home support services are designed to enable patients with health problems to remain in their own homes for as long as possible.

In British Columbia, the rate of publicly-funded home support utilization was 1764 hours per 1,000 population in 2001/02. There was significant variation in utilization rates between health authorities, health service delivery areas and local health areas. The Vancouver Coastal Health Authority had the highest rate of home support utilization (2090 hours per 1,000 population), while Fraser Health Authority had the lowest (1501 hours per 1,000). Across local health areas, there were substantial differences in the use of this type of care. Residents of a number of local health areas such as Stikine, Nisga'a, Telegraph Creek, and Central Coast, received no hours of home support. By comparison, the local health area of Vancouver Downtown Eastside reported the highest rate of home support in the province with 4496 hours per 1,000 population.

Sources: PURRFECT 8.1, BC Ministry of Health Services; PEOPLE 27, BC Stats
Year: 2001/02

Sources: PURRFACT 8.1, BC Ministry of Health Services; PEOPLE 27, BC Stats
Year: 2001/02

The rate of home support utilization for Fraser Health Authority was 1501 hours per 1,000 population in 2001/02, compared to the provincial average rate of 1764 hours per 1,000. Fraser reported the lowest utilization rate of all health authorities, and less variation in rates between its local health areas than other health authorities. Lower utilization rates were evident in the urban, western local health areas of Delta, Langley, Coquitlam, Maple Ridge, and the combined Surrey/South Surrey/White Rock. The local health area of Agassiz-Harrison had the lowest utilization of home support with 552 hours per 1,000 population, while Mission had the highest with 2363 hours per 1,000 population.

Fraser HA		Home support services: hours per 1,000 pop.
37	Delta	1048
43	Coquitlam	1340
41	Burnaby	1897
201/202	Surrey/S. Surrey	1186
34	Abbotsford	1711
35	Langley	1365
42	Maple Ridge	1485
33	Chilliwack	2142
76	Agassiz-Harrison	552
75	Mission	2363
40	New Westminster	1966
32	Hope	1742
LHAs ordered by PMR

Sources: PURRFECT 8.1, BC Ministry of Health Services; PEOPLE 27, BC Stats
Year: 2001/02

The rate of home support utilization for Vancouver Coastal Health Authority was 2090 hours per 1,000 population in 2001/02, compared to the provincial average rate of 1764 hours per 1,000. Vancouver Coastal reported the highest utilization rate of all health authorities, and considerable variation in utilization rates between its local health areas. The highest utilization of home support occurred in the local health areas of Vancouver Downtown Eastside (with the highest rate of home support utilization in the province at 4496 hours per 1,000 population) and Vancouver City Centre. The local health area of West Vancouver-Bowen Island had the lowest utilization of home support with 1427 hours per 1,000 population, while Central Coast received no home support at all.

Vancouver Coastal HA		2090
45	West Vancouver	1427
164	Vanc. Westside	1823
38	Richmond	1635
166	Vanc. South	1657
44	North Vancouver	1726
163	Vanc. North East	2179
165	Vanc. Midtown	1651
48	Howe Sound	1646
47	Powell River	2121
46	Sunshine Coast	1609
161	Vanc. City Centre	4466
49	Bella Coola	3149
83	Central Coast	0
162	Vanc. Dntn Eastside	4496

LHAs ordered by PMR

Sources: PURRFECT 8.1, BC Ministry of Health Services; PEOPLE 27, BC Stats
Year: 2001/02

The rate of home support utilization for Vancouver Island Health Authority was 1827 hours per 1,000 population in 2001/02, compared to the provincial average rate of 1764 hours per 1,000. There was considerable variation in utilization rates between local health areas in Vancouver Island. The highest utilization of home support occurred in the local health area of Island North with 3734 hours per 1,000 population. The lowest utilization rates were recorded for the local health areas of Island West, Saanich, Nanaimo, and Alberni.

Home support services: hours per 1,000 pop.	
Vancouver Island HA	1827
64	Gulf Islands 1635
63	Saanich 1161
69	Qualicum 1632
62	Sooke 2818
65	Cowichan 1982
66	Lake Cowichan 2467
71	Courtenay 1911
68	Nanaimo 1523
61	Greater Victoria 1859
72	Campbell River 3305
67	Ladysmith 1722
70	Alberni 1554
85	Island North 3734
84	Island West 888
LHAs ordered by PMR

The rate of home support utilization for Interior Health Authority was 1695 hours per 1,000 population in 2001/02, compared to the provincial average rate of 1764 hours per 1,000. There was considerable variation in utilization rates between local health areas in Interior. The highest utilization of home support occurred in the local health area of Princeton with 3825 hours per 1,000 population. The lowest utilization rates were recorded for the local health areas of Central Okanagan, Lillooet, Merritt, Windermere, Summerland, Salmon Arm, Trail and Vernon.

Home support services: hours per 1,000 pop.	
Interior HA	1695
23	Central Okanagan
4	Windermere
13	Kettle Valley
77	Summerland
20	Salmon Arm
14	South Okanagan
6	Kootenay Lake
1	Fernie
21	Armstrong-Spall.
22	Vernon
15	Penticton
5	Creston
7	Nelson
26	North Thompson
2	Cranbrook
30	South Cariboo
10	Arrow Lakes
12	Grand Forks
9	Castlegar
16	Keremeos
24	Kamloops
3	Kimberley
17	Princeton
27	Cariboo-Chilcotin
19	Revelstoke
29	Lillooet
25	100 Mile House
11	Trail
18	Golden
78	Enderby
31	Merritt

Sources: PURRFECT 8.1, BC Ministry of Health Services; PEOPLE 27, BC Stats
Year: 2001/02

The rate of home support utilization for Northern Health Authority was 1982 hours per 1,000 population in 2001/02, compared to the provincial average rate of 1764 hours per 1,000. There was moderate variation in utilization rates between local health areas in Northern. The highest utilization of home support occurred in the local health areas of Burns Lake, Nechako and Kitimat. The lowest utilization rate was recorded for Snow Country. The local health areas of Stikine, Nisga'a, and Telegraph Creek received no home support.

Home support services:
hours per 1,000 pop.

Northern HA		1982
54	Smithers	2291
60	Peace River North	1458
80	Kitimat	2467
53	Upper Skeena	1345
57	Prince George	1848
55	Burns Lake	3173
88	Terrace	2077
28	Quesnel	2273
87	Stikine	0
59	Peace River South	1817
56	Nechako	2668
52	Prince Rupert	2118
81	Fort Nelson	724
50	Queen Charlotte	1716
92	Nisga'a	0
51	Snow Country	344
94	Telegraph Creek	0

LHAs ordered by PMR

Data are drawn from the BC Chronic Disease Management program of the BC Ministry of Health Services. Residents insured under the Medical Services Plan were assumed to have diabetes if they had one or more hospital admissions or two or more physician services within a year where diabetes was given as a diagnosis; or they had one or more PharmaNet claims for insulin, oral hypoglycaemics or glucose-testing strips. The all-age prevalence for diabetes was calculated by dividing the number of persons with diagnosed diabetes in an area by the total population of that area.

In 2001/02, 4.74% of British Columbia's population had diagnosed diabetes.

All-age diabetes prevalence

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Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

● Individual LHA value
▲ Overall HA value

LHA (ordered by PMR) Diabetes BC overall

Fraser HA	4.69%	4.74%
37 Delta	4.50%	
43 Coquitlam	3.64%	
41 Burnaby	4.73%	
201/202 Surrey/S. Surrey	4.85%	
34 Abbotsford	5.21%	
35 Langley	4.48%	
42 Maple Ridge	4.46%	
33 Chilliwack	5.53%	
76 Agassiz-Harrison	5.25%	
75 Mission	5.71%	
40 New Westminster	5.05%	
32 Hope	5.89%	

Vancouver Coastal HA	4.36%	
45 West Vancouver	3.85%	
164 Vanc. Westside	3.24%	
38 Richmond	4.51%	
166 Vanc. South	5.20%	
44 North Vancouver	3.54%	
163 Vanc. North East	5.22%	
165 Vanc. Midtown	4.63%	
48 Howe Sound	2.72%	
47 Powell River	6.60%	
46 Sunshine Coast	4.83%	
161 Vanc. City Centre	3.89%	
49/83 Bella Coola/Cent. C.	5.50%	
162 Vanc. Dntn Eastside	5.61%	

Vancouver Island HA	5.14%	
64 Gulf Islands	4.46%	
63 Saanich	5.00%	
69 Qualicum	6.35%	
62 Sooke	4.29%	
65/66 Cowichan/Lake Cow.	4.75%	
71 Courtenay	4.99%	
68 Nanaimo	5.44%	
61 Greater Victoria	5.24%	
72/84 Campbell R./Isl. West	4.84%	
67 Ladysmith	6.17%	
70 Alberni	5.47%	
85 Island North	4.16%	

Interior HA	5.21%	
23 Central Okanagan	4.65%	
4 Windermere	3.24%	
77 Summerland	5.81%	
20 Salmon Arm	5.57%	
1 Fernie	4.02%	
14/16 S. Okan./Keremeos	7.84%	
21 Armstrong-Spall.	4.38%	
22 Vernon	5.73%	
6/7 Kootenay L./Nelson	4.46%	
15 Penticton	5.95%	
5 Creston	6.94%	
12/13 Grand Forks/Kettle V.	6.20%	
26 North Thompson	4.77%	
2 Cranbrook	4.37%	
30 South Cariboo	6.17%	
10 Arrow Lakes	6.67%	
9 Castlegar	5.46%	
24 Kamloops	5.12%	
3 Kimberley	5.27%	
17 Princeton	6.86%	
27 Cariboo-Chilcotin	4.74%	
19 Revelstoke	4.22%	
29 Lillooet	5.18%	
25 100 Mile House	4.69%	
11 Trail	5.88%	
18 Golden	3.30%	
78 Enderby	5.58%	
31 Merritt	6.34%	

Northern HA	4.30%	
53/54 Upper Sk./Smithers	3.44%	
60/81 Peace R. N./Ft. Nelson	3.11%	
80 Kitimat	5.49%	
57 Prince George	4.19%	
55 Burns Lake	4.38%	
28 Quesnel	4.99%	
88/92 Terrace/Nisga'a	4.63%	
59 Peace River South	4.65%	
56 Nechako	3.83%	
50/52 Q. Charlotte/P. Rupert	5.85%	
51/87/94 Snow Country/Stikine/Telegraph Creek	4.18%

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

In 2001/02, 4.74% of British Columbia's population had diagnosed diabetes. The health authorities with the highest all-age prevalence were Interior and Vancouver Island, at 5.21% and 5.14% respectively. These were also the health authorities with the highest proportion of the population over the age of 65, at 16.3% and 16.6% respectively. The Northern Health Authority had the lowest all-age prevalence at 4.30%.

At the health services delivery area level, the all-age prevalence ranged from a low of 3.75% for Northeast to a high of 5.54% for Central Vancouver Island. At the local health area level, the all-age prevalence ranged from a low of 2.72% for Howe Sound to a high of 7.84% for Southern Okanagan/Keremeos. Other local health areas with high all-age prevalence included Creston (6.94%), Princeton (6.86%), Arrow Lakes (6.67%), Powell River (6.60%), and Qualicum (6.35%). All of these local health areas had a high proportion of older adults.

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

The complications associated with diabetes can be delayed or even prevented with appropriate self-management and clinical care. Recommended services include: two or more hemoglobin subtype A1c tests during a year; at least one retinal eye exam per year; at least one urinary microalbumin test per year; and at least one serum lipid test every three years. In 2001/02, the proportion of British Columbians with diagnosed diabetes who received these four recommended services was 35%, 47%, 28% and 70% respectively.

In 2001/02, 4.69% of Fraser Health Authority's population had diagnosed diabetes. Only the local health area of Langley recorded above provincial average use on all four measures of recommended services. Coquitlam was above the provincial average on three of the four measures while the local health areas of Burnaby, Delta, New Westminster and Surrey were above the provincial average on two of the four measures. Maple Ridge, Mission, Agassiz-Harrison, Chilliwack and Hope were above the provincial average on one of the four measures while the local health area of Abbotsford was below the provincial average on all four measures.

Fraser HA		All-age diabetes prevalence
Fraser HA		4.69%
37	Delta	4.50%
43	Coquitlam	3.64%
41	Burnaby	4.73%
201/202	Surrey/S. Surrey	4.85%
34	Abbotsford	5.21%
35	Langley	4.48%
42	Maple Ridge	4.46%
33	Chilliwack	5.53%
76	Agassiz-Harrison	5.25%
75	Mission	5.71%
40	New Westminster	5.05%
32	Hope	5.89%

LHAs ordered by PMR

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

The complications associated with diabetes can be delayed or even prevented with appropriate self-management and clinical care. Recommended services include: two or more hemoglobin subtype A1c tests during a year; at least one retinal eye exam per year; at least one urinary microalbumin test per year; and at least one serum lipid test every three years. In 2001/02, the proportion of British Columbians with diagnosed diabetes who received these four recommended services was 35%, 47%, 28% and 70% respectively.

In 2001/02, 4.36% of Vancouver Coastal Health Authority's population had diagnosed diabetes. No local health area recorded above provincial average use on all four measures of recommended services. Southern local health areas (Richmond, Vancouver South, Vancouver Northeast, and Vancouver Midtown) were above the provincial average on three of the four measures. The local health areas of Powell River, Sunshine Coast, Howe Sound and West Vancouver were above the provincial average on only one of the four measures, while the local health areas of Vancouver Centre and Vancouver Downtown Eastside were below the provincial average on all four measures.

Vancouver Coastal HA		All-age diabetes prevalence
45	West Vancouver	3.85%
164	Vanc. Westside	3.24%
38	Richmond	4.51%
166	Vanc. South	5.20%
44	North Vancouver	3.54%
163	Vanc. North East	5.22%
165	Vanc. Midtown	4.63%
48	Howe Sound	2.72%
47	Powell River	6.60%
46	Sunshine Coast	4.83%
161	Vanc. City Centre	3.89%
49/83	Bella Coola/Cent. C.	5.50%
162	Vanc. Dntn Eastside	5.61%

LHAs ordered by PMR

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

The complications associated with diabetes can be delayed or even prevented with appropriate self-management and clinical care. Recommended services include: two or more hemoglobin subtype A1c tests during a year; at least one retinal eye exam per year; at least one urinary microalbumin test per year; and at least one serum lipid test every three years. In 2001/02, the proportion of British Columbians with diagnosed diabetes who received these four recommended services was 35%, 47%, 28% and 70% respectively.

In 2001/02, 5.14% of Vancouver Island Health Authority's population had diagnosed diabetes. Only the local health area of Island North recorded above provincial average use on all four measures of recommended services. Cowichan/Lake Cowichan, Ladysmith, Qualicum and Saanich were above the provincial average on three of the four measures while the local health areas of Alberni, Courtenay and Campbell River/Island West were above the provincial average on two of the four measures. Nanaimo was above the provincial average on one of the four measures while the local health area of Gulf Islands was below the provincial average on all four measures.

All-age diabetes prevalence	
Vancouver Island HA	5.14%
64	Gulf Islands 4.46%
63	Saanich 5.00%
69	Qualicum 6.35%
62	Sooke 4.29%
65/66	Cowichan/Lake Cow. 4.75%
71	Courtenay 4.99%
68	Nanaimo 5.44%
61	Greater Victoria 5.24%
72/84	Campbell R./Isl. West 4.84%
67	Ladysmith 6.17%
70	Alberni 5.47%
85	Island North 4.16%

LHAs ordered by PMR

The complications associated with diabetes can be delayed or even prevented with appropriate self-management and clinical care. Recommended services include: two or more hemoglobin subtype A1c tests during a year; at least one retinal eye exam per year; at least one urinary microalbumin test per year; and at least one serum lipid test every three years. In 2001/02, the proportion of British Columbians with diagnosed diabetes who received these four recommended services was 35%, 47%, 28% and 70% respectively.

In 2001/02, 5.21% of Interior Health Authority's population had diagnosed diabetes. No local health area recorded above provincial average use on all four measures of recommended services. Six were above the provincial average on three measures. Twenty-two of the twenty-eight local health areas were below the provincial average on at least two of the four measures, and North Thompson, Golden and Arrow Lakes were below the average on all four.

Interior HA		All-age diabetes prevalence
5.21%		
23	Central Okanagan	4.65%
4	Windermere	3.24%
77	Summerland	5.81%
20	Salmon Arm	5.57%
1	Fernie	4.02%
14/16	S. Okan./Keremeos	7.84%
21	Armstrong-Spall.	4.38%
22	Vernon	5.73%
6/7	Kootenay L./Nelson	4.46%
15	Penticton	5.95%
5	Creston	6.94%
12/13	Grand Forks/Kettle V.	6.20%
26	North Thompson	4.77%
3	Cranbrook	4.37%
30	South Cariboo	6.17%
10	Arrow Lakes	6.67%
9	Castlegar	5.46%
24	Kamloops	5.12%
3	Kimberley	5.27%
17	Princeton	6.86%
27	Cariboo-Chilcotin	4.74%
19	Revelstoke	4.22%
29	Lillooet	5.18%
25	100 Mile House	4.69%
11	Trail	5.88%
18	Golden	3.30%
78	Enderby	5.58%
31	Merritt	6.34%
LHAs ordered by PMR

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

The complications associated with diabetes can be delayed or even prevented with appropriate self-management and clinical care. Recommended services include: two or more hemoglobin subtype A1c tests during a year; at least one retinal eye exam per year; at least one urinary microalbumin test per year; and at least one serum lipid test every three years. In 2001/02, the proportion of British Columbians with diagnosed diabetes who received these recommended services was 35%, 47%, 28% and 70% respectively.

In 2001/02, 4.30% of Northern Health Authority's population had diagnosed diabetes. A number of local health areas were aggregated due to small population numbers. Only the combined local health areas of Upper Skeena/Smithers recorded above provincial average use on all four measures of recommended services. The local health areas of Kitimat and Terrace/Nisga'a were above the provincial average on three of the four measures, while Nechako and Quesnel were above the average on two. Peace River South and Peace River North/Fort Nelson were above the average on one measure, while Burns Lake and Snow Country/Stikine/Telegraph Creek were below the provincial average on all four measures.

Northern HA		All-age diabetes prevalence
		4.30%
53/54	Upper Sk./Smithers	3.44%
60/81	Peace N./Ft. Nelson	3.11%
80	Kitimat	5.49%
57	Prince George	4.19%
55	Burns Lake	4.38%
28	Quesnel	4.99%
88/92	Terrace/Nisga'a	4.63%
59	Peace River South	4.65%
56	Nechako	3.83%
50/52	Q. Charlotte/P. Rupert	5.85%
51/87/94	Snow Country/Stikine/Telegraph Creek	4.18%

LHAs ordered by PMR

In 2001/02 there were 68,135 people diagnosed with congestive heart failure living in British Columbia, or 1.66% of the population. The health authority with the highest all-age prevalence was Interior with 2.15% of the population diagnosed with congestive heart failure. This health authority also has a high proportion of the population over the age of 65. The Northern Health Authority had the lowest all-age prevalence at 1.27%.

At the health services delivery area level, the all-age prevalence ranged from a low of 1.05% for Northeast to a high of 2.45% for Kootenay-Boundary. Okanagan and Thompson-Cariboo also recorded an all-age prevalence of greater than 2%.

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

Experts recommend that patients with congestive heart failure (CHF) be treated with specific classes of drugs. Two of the most common treatments are angiotensin-converting enzyme inhibitors (ACE-I) and loop diuretics. Beta-blockers, digoxin and spironolactone are also used for some patients, and angiotensin-receptor blockers (ARBs) are recommended in cases of ACE-I or beta-blocker intolerance.

In 2001/02, the proportion of British Columbians with CHF who received two or more prescriptions for recommended drugs was 45.5% for ACE-I, 51.0% for diuretics, 25.6% for digoxin, 13.1% for beta-blockers, 11.3% for spironolactone and 8.7% for ARBs.

In 2001/02, 1.49% of Fraser Health Authority's population were diagnosed with congestive heart failure. The health service delivery areas of Fraser South and Fraser East were marginally above the provincial average for ACE-I use.

Fraser HA	All-age CHF prevalence
23 Fraser South	1.46%
22 Fraser North	1.30%
21 Fraser East	1.96%
HSDAs ordered by PMR

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

Experts recommend that patients with congestive heart failure (CHF) be treated with specific drugs. Two of the most common treatments are angiotensin-converting enzyme inhibitors (ACE-I) and loop diuretics. Beta-blockers, digoxin and spirinolactone are also used for some patients, and angiotensin-receptor blockers (ARBs) are recommended in cases of ACE-I or beta-blocker intolerance.

In 2001/02, the proportion of British Columbians with CHF who received two or more prescriptions for recommended drugs was 45.5% for ACE-I, 51.0% for diuretics, 25.6% for digoxin, 13.1% for beta-blockers, 11.3% for spirinolactone and 8.7% for ARBs.

In 2001/02, 1.49% of Vancouver Coastal Health Authority's population were diagnosed with congestive heart failure. In the North Shore–Coast Garibaldi health service delivery area, ACE-I use was above the provincial average, while diuretic prescriptions were at the provincial average. Richmond and Vancouver health service delivery areas showed below provincial average use for both ACE-I and diuretics, with Richmond recording higher prescriptions of ARB and beta-blockers.

Vancouver Coastal HA		All-age CHF prevalence
31	Richmond	1.27%
33	North Shore - Coast Gar.	1.58%
32	Vancouver	1.52%
HSDAs ordered by PMR

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

Experts recommend that patients with congestive heart failure (CHF) be treated with specific drugs. Two of the most common treatments are angiotensin-converting enzyme inhibitors (ACE-1) and loop diuretics. Beta-blockers, digoxin and spirinolactone are also used for some patients, and angiotensin-receptor blockers (ARBs) are recommended in cases of ACE-1 or beta-blocker intolerance.

In 2001/02, the proportion of British Columbians with CHF who received two or more prescriptions for recommended drugs was 45.5% for ACE-I, 51.0% for diuretics, 25.6% for digoxin, 13.1% for beta-blockers, 11.3% for spirinolactone and 8.7% for ARBs.

In 2001/02, 1.79% of Vancouver Island Health Authority's population were diagnosed with congestive heart failure. All three health service delivery areas were at or above the provincial average for both ACE-I and diuretic use. South Vancouver Island recorded significantly higher diuretic prescriptions than the provincial average.

All-age CHF prevalence	
Vancouver Island HA	1.79%
41 South Vancouver Island	1.68%
42 Central Vancouver Island	1.98%
43 North Vancouver Island	1.70%
HSDAs ordered by PMR

Experts recommend that patients with congestive heart failure (CHF) be treated with specific drugs. Two of the most common treatments are angiotensin-converting enzyme inhibitors (ACE-1) and loop diuretics. Beta-blockers, digoxin and spironolactone are also used for some patients, and angiotensin-receptor blockers (ARBs) are recommended in cases of ACE-1 or beta-blocker intolerance.

In 2001/02, the proportion of British Columbians with CHF who received two or more prescriptions for recommended drugs was 45.5% for ACE-I, 51.0% for diuretics, 25.6% for digoxin, 13.1% for beta-blockers, 11.3% for spironolactone and 8.7% for ARBs.

In 2001/02, 2.15% of Interior Health Authority's population were diagnosed with congestive heart failure. All four health service delivery areas were at or above the provincial average for both ACE-I and diuretic prescriptions.

Interior HA	All-age CHF prevalence
13 Okanagan	2.24%
11 East Kootenay	1.77%
12 Kootenay - Boundary	2.45%
14 Thompson - Cariboo	2.03%

HSDAs ordered by PMR

Population
Cartogram

Sources: Chronic Disease Management, BC Ministry of Health Services; PEOPLE 28, BC Stats
Year: 2001/02

Experts recommend that patients with congestive heart failure (CHF) be treated with specific drugs. Two of the most common treatments are angiotensin-converting enzyme inhibitors (ACE-I) and loop diuretics. Beta-blockers, digoxin and spirinolactone are also used for some patients, and angiotensin-receptor blockers (ARBs) are recommended in cases of ACE-I or beta-blocker intolerance.

In 2001/02, the proportion of British Columbians with CHF who received two or more prescriptions for recommended drugs was 45.5% for ACE-I, 51.0% for diuretics, 25.6% for digoxin, 13.1% for beta-blockers, 11.3% for spirinolactone and 8.7% for ARBs.

In 2001/02, 1.27% of Northern Health Authority's population were diagnosed with congestive heart failure. All three health service delivery areas were above the provincial average for ACE-I prescriptions. Two of the three (Northeast and Northern Interior) were also above the provincial average for diuretic prescriptions while the Northwest recorded use below the provincial average.

Northern HA		All-age CHF prevalence
53		1.27%
53	Northeast	1.05%
52	Northern Interior	1.29%
51	Northwest	1.38%
HSDAs ordered by PMR		

Chapter 6: Primary Health Care Outcomes

There are a number of outcomes for which PHC is responsible. Immediate or direct outcomes are those for which this sector is most responsible. Immediate outcomes include: maintaining or improving the health of the PHC workforce; increasing knowledge about health and health care among the population; reducing the risk, duration and effects of acute and episodic conditions; and, reducing the risks and effects of continuing health conditions.

PHC has a lesser degree of influence over intermediate and final outcomes. Intermediate outcomes include acceptability of services; appropriateness of place and provider; health care system efficiency; and health system equity and responsiveness.

One of the principal expectations Canadians hold of their health system is that care should be delivered to those most in need. That is, PHC will be distributed to populations in an equitable and responsive way. We have dedicated the final chapter to describing the relationship between population health status (or need for health care), the supply of general practice providers, and the use of PHC and related services. To understand the responsiveness of PHC, we assessed whether lower (or higher) health status is related to higher (or lower) supply of providers, and higher (or lower) use of services.

The role of PHC providers as gatekeepers to other health care sectors is one mechanism by which PHC influences many immediate and intermediate outcomes. For example, prescribing and referral patterns influence health care system efficiency and responsiveness, as well as the appropriateness of place and provider. The following profiles, available in the *BC Health Atlas (2nd ed.)*, offer a glimpse into health care sectors that are influenced indirectly by PHC services.

- [Acute care days](#) (2000/01)
- [Hospital separations](#) (2000/01)
- [Specialist expenditures](#) (2000/01)
- [PharmaCare expenditures](#) (2001)

Chapter 7: A First Glance at Equity in the Distribution of Primary Health Care Services

The goal of this project was to quickly compile a snapshot of the primary health care (PHC) system in British Columbia—and the health of its users—to inform policy and planning for the renewal of this sector. As a collection, the profiles in this report will enable health system planners to better understand the demographic, socioeconomic and health characteristics of the population; temporal changes in population size; the level of supply and geographic distribution of PHC providers; and patterns of delivery and use of PHC and related services. These profiles, while generally drawing on existing data, provide important new perspectives on geographic variation and distribution, and significantly, are presented for the first time as a comprehensive collection. We used a results-based logic model to describe the contexts, inputs, activities, outputs and outcomes of the PHC sector, and to guide the selection of information included in this report.

One of the foremost expectations Canadians hold of their health system is that care will be delivered to those most in need.¹ Equity simply reflects the effectiveness of the health system in distributing services to populations on the basis of their relative need for health care. People with greater need should receive proportionally more services, while individuals with similar needs should receive similar levels of care. The PHC sector contributes to health system equity directly through its responsibility for distribution of care within this sector, and indirectly through control over prescriptions, referrals and hospital admissions.

In recognition of public expectations and policy objectives regarding equity in the distribution of health care, the provincial government introduced a revised funding formula for health authorities in 2002. The formula was designed, in part, to account for regional differences in the relative need for health care. Health authorities, however, do not fund the vast majority of general practice providers in the province: most of these providers are remunerated on a fee-for-service basis through the Medical Services Plan. Other than work published in the *BC Health Atlas (2nd ed.)*, little analysis has been done in

the province to determine whether PHC services are being allocated to health regions on the basis of their relative need for this care.

In this chapter, we take a first glance at the level of equity in British Columbia's PHC system by looking closely at the association between population health status, or need for health care (as measured by premature mortality rate), and the following key profiles:

- Supply of general practice providers
- Expenditures on general practice services
- Emergency room visits
- Home-based professional services
- Home support services
- Combined expenditures on PHC services (a composite profile)

As outlined in Chapter 2, in this report we use premature mortality rate (PMR) as an indicator of population health status, and therefore, population health care service needs. Rather than viewing premature mortality as a health outcome (e.g. where higher health status could indicate more effective health care services), populations with higher PMR (low health status) are more likely to require more care. Determining the relative needs of different populations and the optimal level of service use is problematic, however, as it relies on the capacity to measure need, to make judgments about the effectiveness of care and the capacity to benefit from care, and to determine the right level of care.

In this chapter we explore the relationship between PMR and the utilization of general practice services, emergency rooms and publicly-funded home-based care in more detail. We then combined this collection of PHC services to determine whether these services might work in synchrony to respond to the needs of local health areas with varying population health status.

Methods

In this chapter, local health area values for each PHC profile are graphed against PMR and represented as scatter plots, providing a general indication of the degree of association between supply/use of services and need for care. Trend lines illustrate the relationship between the two variables. Dashed trend lines represent the association between supply/use and need for care for all local health areas. Solid trend lines represents the association after excluding: (a) areas identified as outliers, and/or (b) areas where services were known to be absent or close to zero (e.g. emergency rooms in remote areas). The level of association for both trend lines was calculated.

Pearson correlation coefficients were used to assess the degree of association between each PHC profile and PMR at the local health area. The Pearson correlation is a standard approach for measuring the nature and level of agreement between variables. Correlations were categorized into zero (or low) association, moderate association, strong association, or very strong association according to the scale shown below. Correlations were not weighted.¹⁷

Table 1: Categorization of correlation coefficients

ASSOCIATION	PEARSON	P Value
Very strong	> 0.75	P < 0.05
Strong	0.60-0.75	P < 0.05
Moderate	0.40-0.59	P < 0.05
No (or low)	< 0.40	P > 0.05

Bar charts are included for some profiles to provide an alternative visual representation of the association between supply/use and PMR. Local health areas are rank ordered from top to bottom on the basis of increasing PMR (declining health status) to enable comparison of use relative to health status.

Supply of general practice providers

Supply of general practice providers is fully profiled in Chapter 4. Data used to estimate the age/sex-standardized rate of full-time equivalent (FTE) general practice providers per 10,000 population were obtained from Medical Services Plan (MSP) practitioner and billing files, Alternative Payments Program files, and primary health care organization files for 2000/01. MSP fee-for-service providers were estimated using type of practice methodology.

For the PHC system to be operating equitably, we would expect to see local health areas with low health status having a higher than expected supply of PHC providers to meet their additional needs. This would be displayed as a strong, positive association between PMR and supply of general practice providers.

There is a moderate level of association between supply of general practice providers and PMR across the province (**Figures 1 and 2**). When the outlying local health areas of Vancouver Downtown Eastside and Vancouver Island West are excluded, the level of association remains moderate.

A number of local health areas with low health status, such as Nisga'a, and the combined areas of Bella Coola/Central Coast and Snow Country/Stikine/Telegraph Creek, show a higher than expected rate of general practice providers.

In comparison, the local health areas of Vancouver Downtown Eastside and Vancouver Island West both have low health status, and a lower than expected supply of general practice providers. However, any interpretation of sufficiency of supply requires simultaneous consideration of access to providers in adjacent local health areas. Consider that providers located in Vancouver Island West delivered only 18 percent of general practice services used by people residing in that area in 2001/02 (See Chapter 5: Access to general practice services). Providers in geographically adjacent local health areas, primarily

Campbell River, supplied an additional 34 percent of general practice services used by residents of that area.

Expenditures on general practice services

Profiling the supply of general practice providers is based on the geographic location of providers and their practices—it is a supply-based analysis. But, as illustrated for the local health areas of Vancouver Downtown Eastside and Vancouver Island West, any comprehensive interpretation of service use requires a population-based analysis. In this type of analysis, services are attributed to individuals based on where they live rather than where services were delivered.

Juxtaposing information about the supply of providers on the basis of their geographic location with information about how people in that area use services is important to PHC policy and planning. Consider the local health area of Vancouver Island West: a jurisdiction of approximately 2,500 people and a PMR of 4.10 (compared to the provincial average of 2.81). The supply of general practice providers in this LHA (0.5 FTEs per 10,000 population) was much lower than the provincial average (8.7 FTEs per 10,000). But, expenditures on general practice services for this area (\$182 per capita, after adjusting for age) were significantly higher than the provincial average (\$164 per capita). As noted earlier, general practice providers located outside Vancouver Island West delivered the majority of services received by people living in this local health area.

Full time equivalent general practice providers: rate per 10,000 pop.

Age/sex-standardized rate; 2000/01

Sources of provider data: MSP Practitioner File, Alternative Payments Program, Primary Health Care Organization expenditures. All BC Ministry of Health Services. PEOPLE 28, BC Stats.
 Sources of PMR data: BC Vital Statistics Agency; Hospital separations data, BC Ministry of Health Services; PEOPLE 28, BC Stats.
 Note: LHAs 49/83 Bella Coola/Central Coast and 51/87/94 Snow Country/Stikine/Telegraph Creek have been aggregated.

Figure 2:
Bar chart
illustrating
the association
between supply
of general
practice
providers and
premature
mortality rate

Expenditures on general practice services are fully profiled in Chapter 4. Data used to calculate age-standardized rates of expenditures per capita were obtained from MSP fee-for-service expenditures, Alternative Payments Program files, and primary health care organization files for 2000/01. MSP fee-for-service expenditures were derived using the fee item specialty methodology.

For the PHC system to be operating equitably, we would expect to see local health areas with low health status using more general practice services to meet their additional needs. This would be displayed as a strong, positive association between PMR and expenditures on general practice services.

There is a moderate level of association between expenditures on general practice services and PMR across the province (Figures 3 and 4). When the outlying local health area of Vancouver Downtown Eastside is excluded, a strong level of association results.

The local health area of Vancouver Downtown Eastside displays both low health status and lower than expected expenditures on general practice services. This suggests that this population receives less general practice services than might be expected on the basis of demographics and health status, and therefore need.

In comparison, many rural and remote local health areas with low health status—Nisga'a, Bella Coola/Central Coast,

Figure 3:
Scatter plot
illustrating
the association
between
expenditures on
general practice
services and
premature
mortality rate

Per capita expenditures on general practice services

Age-standardized rate; 2000/01

Sources of expenditure data: PURRFECT 8.1, Out-of-province payment data: Alternative Payments Program, Primary Health Care Organization expenditures. All BC Ministry of Health Services, PEOPLE 27, BC Stats.

Sources of PMR data: BC Vital Statistics Agency; Hospital separations data, BC Ministry of Health Services; PEOPLE 28, BC Stats.

Note: LHAs 49/83 Bella Coola/Central Coast, 51/87/94 Snow Country/Stikine/Telegraph Creek and 201/202 Surrey/South Surrey/White Rock have been aggregated.

Figure 4:
Bar chart
illustrating
the association
between
expenditures
on general practice
services and
premature
mortality rate

Snow Country/Stikine/Telegraph Creek, Upper Skeena—show higher expenditures than would be expected on the basis of health and demographic status.

In the *BC Health Atlas (2nd edition)*, no (or only a low level of) association was reported between general practitioner expenditures and PMR. Why do we then report a moderate to strong level of association between expenditures on general practice services and PMR?

The most notable difference between the *BC Health Atlas* and this report is advancement in methodology that allowed our analysis to include general practice services expenditures made under the Alternative Payments Program and primary health care organizations, in

addition to MSP fee-for-service payments. The *BC Health Atlas* counted expenditures associated with fee-for-service physicians only. Indeed, in our own analysis, an assessment of just the fee-for-service portion of expenditures also showed no association with PMR, indicating the importance of including alternative payment sources when profiling such measures for British Columbia.

Emergency room visits

Emergency room visits are fully profiled in Chapter 5. Visit rates per 1,000 population were estimated in a previous CHSPR analysis using 1998/99 MSP fee-for-service physician billing claims. Visits to hospitals where ER physicians are paid through salary and sessional arrangements could

Figure 5: Scatter plot illustrating the association between ER visit rates and premature mortality rate, estimating ER visit rates in select local health areas on the basis of health status and demographic profile

not be identified through the MSP data and were therefore excluded from analyses. This exclusion particularly affects Vancouver (data from Vancouver General Hospital and St. Paul's Hospital are unavailable) and selected coastal and northern local health areas.

Our analyses on general practice services and providers indicated the importance of including data from alternative funding sources to properly calculate an association with PMR. We therefore conducted analyses to assess the significance of the missing data for ER visits to our overall estimates of the association with PMR.

An analysis of MSP fee-for-service data alone suggests a low level of association between ER use and PMR. We judge that eight local health areas in Vancouver and the north display low/under-reported ER visit rates due to alternative funding arrangements. If we assume that population-based rates of ER use in these eight LHAs are at the provincial average, the level of association between ER visits and PMR remains low.

However, if we assume that population-based rates of ER use in these eight LHAs are associated with the health status and demographic profile of the area, the association between ER use and PMR becomes moderate. [Figure 5](#) illustrates this scenario.

Two local health areas—Powell River and Cariboo-Chilcotin—display average health status and higher than expected ER visit rates. The use of ER services in these two areas is an interesting case study, as both record levels of supply of general practice providers and expenditures on general practice services as predicted on the basis of health status and demographic profile. Health care administrators, practitioners and people who reside in or service these local health areas are best situated to identify why this might be.

Home-based professional services

Home-based professional services include publicly-funded nursing, physiotherapy and occupational therapy and are often used by patients following discharge from a hospital, or by individuals who require assistance to maintain their independence at home. Data used to calculate age-standardized visit rates per 1,000 population were obtained from PURRFECT 8.1 for 2001/02. Home-based professional services are fully profiled in Chapter 5.

For the PHC system to be operating equitably, we would expect to see local health areas with low health status having a higher than average use of home-based professional services to meet their additional needs. This would be displayed as a strong, positive association between PMR

and use of home-based professional services.

There is no association between publicly-funded home-based professional service use and PMR across the province (Figure 6). When the outlying local health areas with few to zero visits are excluded, a moderate level of association results. These outlying local health areas of Telegraph Creek, Central Coast, Snow Country, Nisga'a, Vancouver Island West, Bella Coola and Stikine display both low health status and lower than expected visit rates.

In contrast, Vancouver Downtown Eastside local health area displays the lowest health status across the province and one of the highest visit rates for home-based professional services.

Figure 6: Scatter plot illustrating the association between home-based professional services and premature mortality rate

Home-based professional service use is also much higher than might be expected, based on population health status and age structure, for the local health area of North Thompson. Health care administrators, practitioners and people who reside in or service this local health area are best situated to identify why this might be.

Home support services

Home support services are designed to enable individuals with health problems to remain in their own homes for as long as possible and include personal assistance with daily activities such as bathing, dressing and grooming, as well as household tasks such as laundry, vacuuming and cooking. Data used to calculate age-standardized hours

per 1,000 population were obtained from PURRFECT 8.1 for 2001/02. Like home-based professional services, this source includes only publicly-funded home support services. Home support services are fully profiled in Chapter 5.

For the PHC system to be operating equitably, we would expect to see local health areas with low health status having a higher than average use of home support services to meet their additional needs. This would be displayed as a strong, positive association between PMR and utilization of home support services.

There is no association between utilization of publicly-funded home support services and PMR across the province (Figure 7). When the outlying local health areas with

Figure 7: Scatter plot illustrating the association between home support services and premature mortality rate

little to no utilization are excluded, a moderate level of association results.

The outlying local health areas of Telegraph Creek, Central Coast, Snow Country, Nisga'a and Stikine display both low health status and lower than expected utilization rates. In contrast, Vancouver Downtown Eastside local health area displays the lowest health status across the province and one of the highest utilization rates of publicly-funded home support services. This is particularly interesting in light of this local health area's lower than expected supply of general practice providers and expenditures on general practice services. This suggests that publicly-funded home-based services (home-based professional services and home support services) may serve as an alternative to physician-

based care for this population.

Utilization of home support services is also much higher than might be expected, based on population health status and age structure, for the local health area of Vancouver City Centre. Health care administrators, practitioners and people who reside in or service this local health area are best situated to identify why this might be.

Combined expenditures on primary health care

These analyses highlight general trends, and notable anomalies, in the levels of association between selected measures of PHC and PMR. A number of local health areas—the

Figure 8:
Scatter plot
illustrating the
association
between com-
bined PHC
expenditures
and premature
mortality rate

northern local health areas of Nisga'a, Bella Coola/Central Coast, and Snow Country/Stikine/Telegraph Creek—record higher than expected levels of expenditures on general practice services and lower than expected use of emergency rooms and/or publicly-funded home-based services. Conversely, one local health area—Vancouver Downtown Eastside—displays lower than expected expenditures on general practice services and higher than expected use of publicly-funded home-based services.

An important question is therefore:

“Are services provided by general practice, home-based and emergency room providers being used interchangeably to address the health needs of certain populations because of regional variation in service type availability?”

To explore this question further, we summed expenditures on general practice services, emergency room visits²² and publicly-funded home-based care (both home-based professional services and home support services)²³ for each local health area, resulting in a measure of combined per capita expenditures on PHC.

Because expenditures on emergency room visits and home-based care had to be estimated using an assumed dollar value, we conducted a sensitivity analysis to assess the extent of change in association by using a range of dollar values.²⁴ Altering the amount used to calculate expenditures of emergency room visits and home-based care was shown to have little effect. The reason is that the prime determinant of combined expenditures is expenditures on general practice services. A sensitivity analysis was also conducted to assess the extent of change in association under different assumptions about emergency room visit rates in areas where rates had to be estimated because of funding from alternative sources.²⁵ Again, altering these values was shown to have little effect on the measure of combined PHC expenditures.

For the PHC system to be operating equitably, we would expect to see local health areas with low health status having a high level of combined PHC expenditures to meet their additional needs. This would be displayed as a strong, positive association between PMR and combined PHC expenditures.

Remarkably, we see a strong association between combined PHC expenditures and PMR, with few outlying local health areas (Figures 8 and 9). Moreover, all areas (with one exception) with low health status have higher than expected expenditures on PHC. This analysis illustrates the importance of considering the use of multiple types of services when making judgments about PHC system equity. Areas where equity in resource allocation may appear to be lacking—for example, through lower than expected use of home support services—may instead have their PHC needs met through heavier reliance on a different type of service, such as general practice services.

Estimated per capita primary health care combined expenditures

Derived from standardized rates; 1999, 2000/01, 2001/02

Sources of expenditure data: PURRFECT 8.1; Out-of-province payment data; Alternative Payments Program, Primary Health Care Organization expenditures.

All BC Ministry of Health Services, CHSPR, PEOPLE 27; PEOPLE 28, BC Stats.

Sources of PMR data: BC Vital Statistics Agency; Hospital separations data, BC Ministry of Health Services; PEOPLE 28, BC Stats.

Note: LHAs 49/83 Bella Coola/Central Coast and 51/87/94 Snow Country/Stikine/Telegraph Creek have been aggregated.

Figure 9:
Bar chart
illustrating
the association
between
combined
PHC
expenditures
and premature
mortality rate

Chapter 8: Conclusions

The degree of equity in the allocation of PHC services to populations of varying health status clearly depends on the type of services in question. When considered in isolation, general practice services in British Columbia appear to be equitably distributed to health regions in relation to their health status. This finding parallels results of analysis conducted in other Canadian jurisdictions.^{26,27,28,29} By comparison, publicly-funded home-based services do not seem to be equitably distributed to health regions relative to variation in the health status of geographic populations. This parallels results of analysis of home care use after inpatient care elsewhere in Canada.³⁰

Importantly, our analyses suggest that general practice services, home-based care and emergency room services work in synchrony to respond to the different needs of local health areas across the province. At a glance, therefore, it would appear that resources allocated to a combined set of PHC services are equitably distributed to health regions in British Columbia in relation to variation in population health status.

Another important finding relates to the supply of general practice providers and the utilization of general practice services in local health areas with low health status. The story differs depending on whether we consider the rural and remote northern local health areas, and the coastal region of Bella Coola/Central Coast, or whether we look at the densely populated local health area of Vancouver Downtown Eastside.

Rural and remote areas: Supply of general practice providers and use of general practice services in rural and remote local health areas, such as Nisga'a, Bella Coola/Central Coast, Snow Country/Stikine/Telegraph Creek and Upper Skeena, are higher than expected relative to population health status and demographic structure. Combined PHC expenditures were only slightly higher than expected but these areas had low utilization of home-based services and low use of emergency room services.

The Canadian Institute for Health Information recently released comparative regional profiles that measure the count of general/family physicians per 100,000 population (2001 data). These profiles suggest that the northern rural health service delivery areas in British Columbia have crude rates between 91 and 129 general/family physicians per 100,000. By comparison, northern rural regions in Alberta have rates between 69 and 78 per 100,000. Rural regions in Manitoba have rates between 74 and 77 per 100,000. Rural north regions in Ontario have rates between 81 and 93 per 100,000. This suggests that strategies to recruit and retain physicians in rural and remote areas in British Columbia appear to be more successful, relative to other jurisdictions.

Vancouver Downtown Eastside: Supply of general practice providers and use of general practice services in the local health area of Vancouver Downtown Eastside is lower than expected relative to population health status and demographic structure. Though this local health area had one of the highest utilization levels of publicly-funded home-based services, combined PHC expenditures were slightly lower than expected.

CHSPR will continue to conduct work to better identify community-based PHC services and emergency room visits funded through the Alternative Payments Program that have not been included in this analysis.

These analyses highlight the critical importance of looking at multiple types of services delivered through the PHC system when making assessments of allocation equity. Using just one or two measures of PHC services does not adequately portray regional variation in the mix of health care services use or the ways in which they are complementary. In addition, these analyses shed light on the importance of carefully tailoring approaches to renew PHC to suit local variations in patterns of service utilization.

The need to operate with all possible information at hand applies equally to the underlying PHC data. The inclusion of data from alternative funding sources, such as the Alternative Payments Program, has an enormous impact on understanding the utilization of general practice services. We would like to construct a similarly comprehensive picture for BC's emergency rooms, which are likely to play an important PHC role in certain areas of the province.

In planning for PHC renewal, we have provided a first glance of the supply and utilization of PHC services, and the level of equity in the distribution of PHC resources, across the province. However, much work remains to be done to improve the administrative data infrastructure in British Columbia—particularly in relation to data from alternative funding sources—for PHC planning and evaluation. CHSPR is committed to this agenda and looks forward to developing a comprehensive picture of the attributes and qualities of the PHC system in British Columbia as we progress through our program of research.

Definitions and technical notes

Access to general practice services

Geographic access to general practice services was determined by calculating the percentage of general practice services that patients received in either their own or a geographically adjacent local health area. Data used for this profile for 2001/02 were obtained from PURRFECT 8.1 (MSP referral patterns, LHA MSP referral reports). MSP services were identified using the fee item specialty methodology to count the number of services billed in the general practitioner category of the MSC payment schedule. Unlike the Expenditures on General Practice Services profile, only MSP fee-for-service data from PURRFECT were used to calculate this profile.

Local health areas where more than 10% of general practice services were provided outside the FFS system were excluded from analysis: Vancouver Downtown Eastside (162), Bella Coola (49), Central Coast (83), Fernie (1), Queen Charlotte (50), Nisga'a (92), Snow Country (51), Stikine (87), Upper Skeena (53), and Telegraph Creek (94). Local health areas were considered geographically adjacent unless separated by a body of water with no connecting tunnel or bridge. Data for the local health areas of Surrey/South Surrey (201/202) are not disaggregated in PURRFECT 8.1.

For this profile only, categorization did not rely directly on the Jenks optimization algorithm. Because the local health area of Vancouver Island West is such a strong outlier that it became the only value in the lowest category, we excluded this LHA when calculating the categories, then added it to the lowest class. Full derivation of this profile is detailed in Appendix 1. Also see HEALTH BOUNDARIES; MEDICAL SERVICES PLAN; NATURAL BREAKS (JENKS) CATEGORIZATION; PURRFECT.

Alternative Payments Program (APP)

Eight thousand physicians are paid over \$2.5 billion for health care services in BC.³¹ While the majority of physicians are paid under the Medical Services Plan fee-for-service system, about \$300 million is paid through the Alternative Payments Program (APP), a compensation arrangement involving salary/sessional payments and service agreements. APP is typically used where fee-for-service payments may not guarantee physicians the financial support or stability to provide needed care, such as for specialized and/or labour intensive services, or for services carried out in training hospitals or in less-populated areas. More information is provided in Appendix 1. Also see MEDICAL SERVICES PLAN.

Cartogram

Cartograms are value-by-area maps drawn such that an area is proportional to the data it represents. Cartograms with health service delivery areas sized according to their population are provided in most profiles. Because BC has an uneven population distribution, cartograms provide important context to the choropleth maps. Proportional point symbols are also used: for our profiles, this symbol is a circle and is sized according to local health area population. These proportional circles are drawn using the Flannery method and are superimposed on the population cartogram. Also see CHOROPLETH MAPS; FLANNERY METHOD; HEALTH BOUNDARIES.

Children and adolescents (Website/CD only)

Percentage of the population aged 19 years or younger. Calculated at the local health area level for 2001 from PEOPLE 28.

Children at risk index (Website/CD only)

The children at risk index is calculated by BC Stats by assigning relative weights to various measures reflecting socioeconomic and health issues considered relevant to children.³² The index is compiled from the following variables (including their relative weight), spanning up to five years of data (1997-2002):

Variable	Relative weight	Year of data
% of children <19 on income assistance < 1 year	0.10	Sept 2002
% of children <19 on income assistance > 1 year	0.20	Sept 2002
Children in care per 1,000 population 0-18	0.10	2002
Infant mortality per 1,000 live births	0.20	1997-2001
% below standard for grade 4 reading, writing & math	0.20	99/00-01/02
Criminal charges per 1,000 population aged 12-17	0.20	1999-2001

Children are defined as aged 19 years or younger. Denominator populations (2001) aged 19 years or younger were derived from PEOPLE 28. This index was calculated at the local health area only; no HSDA-level information is available.

Vancouver and Surrey were not partitioned into their component local health areas in the BC Stats methodology. Additionally, BC Stats excluded the following LHAs in their index calculation due to small numbers: Vancouver Island West (84), Queen Charlotte (50), Snow Country (51), Central Coast (83), Stikine (87), and Telegraph Creek (94).

Since the completion of our analyses, BC Stats has released (March 2004) an updated 2003 version of their socioeconomic status rankings.³³ Also see **POPULATION; SOCIOECONOMIC RISK INDEX**.

Choropleth maps

Choropleth maps use colour to signify the values of the profile being mapped. Colours are assigned to the unit of analysis—for example, the local health area—on the basis of the particular data category they fall into. Data are categorized using the natural breaks (Jenks) categorization methodology. Also see **NATURAL BREAKS (JENKS) CATEGORIZATION**.

Congestive heart failure (CHF)

Congestive heart failure (CHF) treatment prevalence was calculated from data for 2001/02 from BC Chronic Disease Management,³⁴ an initiative of the BC Ministry of Health Services. Beneficiaries insured under the MSP were assumed by BC Chronic Disease Management to have CHF if they had one or more acute inpatient hospital admissions, or two or more physician services within a year, where congestive heart failure was given as a diagnosis. These claims data include services provided by BC practitioners with medical specialties 00 to 21, 23, 24, 28, 29, 33, 44, 47 and 48. Services paid by MSP and PHCOs only are included; APP and other payments are excluded.

The all-age treatment prevalence for CHF was calculated by dividing the number of persons with diagnosed CHF in an area by the total population of that area. Data were available at the health services delivery area level only because of the small number of affected individuals. Denominator populations (2001) were derived from PEOPLE 28. All-age treatment prevalence is reported as a crude rate and is not age- or sex-standardized.

International guidelines recommend that patients with CHF be treated with drugs such as angiotensin-converting enzyme inhibitors (ACE-I) and angiotensin receptor blockers (ARBs).^{35,36,37} ARBs are recommended when the patient presents with ACE-I or beta-blocker intolerance. Beta-blockers and digoxin may be added for some patients. Loop diuretics are commonly used to control fluid overload. Spironolactone—another diuretic—is commonly recommended for severe congestive heart failure (ejection fraction <35%) if no renal failure is indicated.

PharmaNet³⁸ data were used to determine if patients with diagnosed congestive heart failure were receiving recommended drugs. Patients were flagged for an indicator of the

recommended services if they received two or more prescription medicines on different dates during the fiscal year. Medicines included:

- Angiotensin converting enzyme inhibitors (ACE inhibitors) (therapeutic classes 24080036, 24080028, 24040002, 24080029, 24080031, 24080034, 24080032);
- Angiotensin II receptor antagonists or blockers (ARBs) (therapeutic classes 24080042, 24080040, 24080041, 24080037, 24080043);
- Beta-blockers (therapeutic classes 24080010, 24080002);
- Digoxin (therapeutic class 24040004);
- Diuretics other than spironolactone (therapeutic classes 40280014, 40280009, 40280006, 40280013, 40281003, 40281001, 40280019); and
- Spironolactone (therapeutic class 40281002).

Also see **MEDICAL SERVICES PLAN; POPULATION, PRIMARY HEALTH CARE ORGANIZATIONS**.

Diabetes

Diabetes treatment prevalence was calculated from data for 2001/02 from BC Chronic Disease Management),³⁴ an initiative of the BC Ministry of Health Services. Beneficiaries insured under the MSP were assumed by BC Chronic Disease Management to have diabetes if they had one or more hospital admissions or two or more physician services within a year where diabetes was given as a diagnosis; or they had one or more PharmaNet claims for insulin, oral hypoglycaemics or glucose testing strips.³⁹ The all-age treatment prevalence for diabetes was calculated by dividing the number of persons with diagnosed diabetes in an area by the total population of that area. Denominator populations (2001) were derived from PEOPLE 28. All-age prevalence is reported as a crude rate and is not age- or sex-standardized.

The chronic complications associated with diabetes can be delayed or even prevented with appropriate self-management and clinical care.^{40,41} In BC, clinical practice guidelines⁴² for diabetic care recommend services including:

- two or more HbA1C tests during a year (MSP fee item 91745);
- at least one retinal eye exam per year (MSP fee items 2010, 2011, 2015, 2040, 2039, 2898, 2899);
- at least one urinary microalbumin test per year (MSP fee items 92396, 91985); and
- at least one serum lipid test every three years (MSP fee items 91375, 91780, 92350).

MSP fee-for-service physician billing claims data by date of service were used to determine if patients with diagnosed diabetes received a series of recommended services. Services provided by BC practitioners with medical specialties 00 to 21, 23, 24, 28, 29, 33, 44, 47 and 48, and paramedical specialties 38 and 39 were included. Only services paid by MSP were included.

Adjacent local health areas were aggregated when less than five general practice providers were located within a given local health area: Bella Coola/Central Coast (49/83); Cowichan/Lake Cowichan (65/66); Campbell River/Vancouver Island West (72/84); South Okanagan/Keremeos (14/16); Kootenay Lake/Nelson (6/7); Grand Forks/Kettle Valley (12/13); Upper Skeena/Smithers (53/54); Peace North/Fort Nelson (60/81); Terrace/Nisga'a (88/92); Queen Charlotte/Prince Rupert (50/52); Snow Country/Stikine/Telegraph Creek (51/87/94). In addition, data for the local health areas of Surrey/South Surrey (201/202) were not disaggregated.

Receipt of recommended services data for the local health areas of Prince Rupert and Queen Charlotte were unreliable due to a known laboratory reporting error and were excluded from analysis. Also see MEDICAL SERVICES PLAN; POPULATION.

Dissemination area (DA)

The smallest standard geographic area for which all census data are disseminated. A dissemination area (DA) is a small, relatively stable geographic unit composed of one or more neighbouring blocks with a population of 400-700. DAs cover the entire territory of Canada.⁴³

Emergency room visits

An emergency room (ER) visit is defined as use of a hospital-based emergency department and is reported as an age/sex-standardized rate per 1,000 population. In the absence of a province-wide tracking system for emergency room services, the vast majority of visits are captured in MSP information on fee-for-service payments to physicians.

CHSPR developed an ER visits indicator using data from 1998/99 MSP fee-for-service physician billing claims.⁴⁴ This indicator relies on identifying all MSP services that occur in a hospital, excluding non-physician and non-emergency fee items and services associated with an inpatient stay, and excluding all billings with unknown age/sex/LHA. Visits to hospitals where ER physicians are paid through salary and sessional arrangements could not be identified through the MSP data and were therefore excluded from analysis (detailed below).

Results were validated against the BC Ministry of Health Services record of total ER visits. Approximately 83% of ER visits in BC were accounted for. However, it should be noted that the process of identifying all ER services is not well understood. There are several methods for billing ER services, and many physician specialties may be billing for ER services. A further complication is that not all emergency services occur in an ER.

Visit rates per 1,000 population were age/sex-standardized using indirect standardization and five year age groupings. Visit rates were then adjusted by removing excluded local health areas, assuming that age/sex-specific utilization remained the same after these exclusions. Denominator populations (2001) were derived from PEOPLE 28.

The local health areas where hospitals paid through salary and sessional arrangements are located were excluded from the profile mapping: Vancouver General Hospital (LHAs 161-166), St. Paul's Hospital in Vancouver (LHAs 161-166); Bella Coola General (LHA 49), R.W. Large Memorial Hospital in Waglisla (LHA 83), and Wrinch Memorial Hospital in Hazelton (LHA 53). In addition, data for the local health areas of Surrey/South Surrey (201/202) were not disaggregated. Also see MEDICAL SERVICES PLAN; POPULATION.

Expenditures on general practice services

Expenditures on general practice services were reported as an age-standardized rate per capita. Data used to calculate expenditures on general practice services were obtained from PURRFECT 8.1 (MSP referral and utilization rates programs), 2000/01 Alternative Payments Program (primary care services) files and 2000/01 primary health care organization files. MSP fee-for-service expenditures were derived using the fee item specialty methodology to count dollars on services billed in the general practitioner category of the MSC payment schedule. Denominator populations (2001) were derived from PEOPLE 27.

Several local health areas were aggregated due to a recognized problem with the allocation of APP funds to specific local health areas at the expense of neighbouring regions. The affected LHAs are: Bella Coola/Central Coast (49/83); Snow Country/Stikine/Telegraph Creek (51/87/94). Data for the local health areas of Surrey/South Surrey (201/202) are not disaggregated in PURRFECT 8.1. Full derivation of this profile is detailed in Appendix 1. Also see ALTERNATIVE PAYMENTS PROGRAM; MEDICAL SERVICES PLAN; PRIMARY HEALTH CARE ORGANIZATIONS; POPULATION; PURRFECT.

Fee-for-service (FFS)

A payment system for physician services where the provider is paid for each service rendered, according to a set fee schedule. Also see **MEDICAL SERVICES PLAN**.

Flannery method

The Flannery method, also known as apparent-magnitude scaling, is a method for scaling the size of proportional point circles that more closely matches how their sizes are perceived. All proportional point circles have been increased by 12%.⁴⁵ Also see **CARTOGRAM**.

Health boundaries

Provincial ministries of health define geographic health regions as legislated administrative areas with health care service delivery responsibilities. The current sub-provincial health boundaries in British Columbia define six health authorities, 16 health service delivery areas, and 89 local health areas. Five health authorities—Fraser, Vancouver Coastal, Vancouver Island, Interior, and Northern—are responsible for providing a range of services to geographically defined sub-populations, from acute hospital care to home and community-based services. The sixth authority, the Provincial Health Services Authority, is responsible for highly specialized health care services and provincial programs and organizations and does not have a sub-provincial population base. Each of the five health authorities is comprised of three or four health service delivery areas, which in turn are divided into local health areas, which generally follow political and natural boundaries.

Home-based professional services

Home-based professional services include publicly-funded nursing, physiotherapy and occupational therapy, and can include assessment, treatment, consultation, referral and/or case management. Visit rates were reported per 1,000 population and were age-standardized using the indirect method and 20 age groups.

Data were obtained from PURRFECT 8.1 for 2001/02 (Continuing care age-standardized utilization rates module), BC Ministry of Health Services. Total (Extended Care, Intermediate Care 1, 2, 3 and Personal Care) care levels were selected. Data for the local health areas of Surrey/South Surrey (201/202) are not disaggregated in PURRFECT 8.1. Denominator populations (2001) derived from PEOPLE 27. Also see **HOME SUPPORT SERVICES; POPULATION; PURRFECT**.

Home support services

Home support services are designed to enable individuals with health problems to remain in their own homes for as long as possible and include personal assistance with daily activities such as bathing, dressing and grooming as well as household tasks such as laundry, cleaning and meal preparation. Like home-based professional services, this source includes only publicly-funded home support services. Utilization of home support is reported as hours per 1,000 population and was age-standardized using the indirect method and 20 age groups.

Data were obtained from PURRFECT 8.1 for 2001/02 (Continuing care age-standardized utilization rates module), BC Ministry of Health Services. Total (Extended Care, Intermediate Care 1, 2, 3 and Personal Care) care levels were selected. Data for the local health areas of Surrey/South Surrey (201/202) are not disaggregated in PURRFECT 8.1. Denominator populations (2001) derived from PEOPLE 27. Also see **HOME-BASED PROFESSIONAL SERVICES; POPULATION; PURRFECT**.

Infant mortality rate (IMR) (Website/CD only)

Infant mortality is defined as any death occurring to a person within the first year of life and is expressed as a rate per 1,000 live births. It is considered a general indicator of population health because it is related to the underlying health of the mother, public health practices, socioeconomic conditions and availability and use of appropriate health care by pregnant women and their children.

Infant mortality rate was calculated by the BC Vital Statistics Agency based on five years of aggregated data (1997-2001).³² Several local health areas were aggregated to provide more stable rates in thinly populated areas: Kootenay Lake/Nelson (6/7); Grand Forks/Kettle Valley (12/13); Campbell River/Vancouver Island West (72/84); and Stikine/Telegraph Creek (87/94). Data for the local health areas of Surrey/South Surrey (201/202) were not disaggregated. Rates based on less than 200 live births were highlighted on the relevant health authority maps. International comparisons were available from the United States Bureau of the Census.⁴⁶

Location of general practice providers

The geographic location of general practice providers was determined using type of practice methodology to identify general practice providers by MSP billing address. Data were obtained from the 2001/02 Medical Services Plan practitioner and billing files. Note that the Supply of General

Practice Providers profile uses 2000/01 MSP data because of the requirement for consistency with combined data sources. This profile uses more recent MSP data (2001/02). Population density is shown as persons per km² by dissemination area from 2001 Census, Statistics Canada.

In larger urban areas (the entirety of Fraser Health Authority, the Vancouver/Richmond/North Shore area, Victoria, Nanaimo, Kelowna, Vernon, Penticton, Kamloops, and Prince George), location was determined by six-digit postal code. In more rural areas, the map scale was unsuitable for mapping specific postal code locations. Location was instead determined by the town or city as identified in the billing address. Where general practice provider location is mapped by postal code, circle sizes are range-graded for simplicity. Where general practice provider location is mapped by town, circle sizes vary in proportion to the number of providers, using Flannery scaling.

This profile does not include Alternative Payments Program or primary health care organization data. Areas which rely heavily on receipt of general practice services through the APP, such as most of the local health areas in the Northwest health services delivery area, as well as the local health areas of Bella Coola and Central Coast, therefore appear to have very few general practice providers. Full derivation of this profile is detailed in Appendix 1. Also see ALTERNATIVE PAYMENTS PROGRAM; DISSEMINATION AREA; FLANNERY METHOD; MEDICAL SERVICES PLAN; PRIMARY HEALTH CARE ORGANIZATIONS.

Medical Services Commission (MSC)

The Medical Services Commission (MSC)⁴⁷ is responsible for managing the Medical Services Plan on behalf of the Government of British Columbia. The MSC must ensure that all BC residents have reasonable access to medical care, and is responsible for managing the provision and payment of medical services in an effective and cost-efficient manner. The MSC includes representatives of government, the BCMA, and MSP beneficiaries. Also see MEDICAL SERVICES PLAN.

Medical Services Plan (MSP)

The Medical Services Plan (MSP)⁴⁸ is the funding mechanism used in BC to insure medically required services provided by physicians and supplementary health care practitioners, laboratory services and diagnostic procedures. Under the MSP billing system, the BC government pays providers based on the number of procedures performed for each patient, a method referred to as fee-for-service. The Medical

Services Plan payment files include fee-for-service payments to BC providers for services to BC and non-BC residents, and payments made on behalf of BC residents who obtained services in Quebec, the US, and other countries. Out-of-province payment data is partitioned separately and includes fee-for-service payments to out-of-province physicians for services to BC residents. When a BC resident receives services in another province (excluding Quebec), the other province bills back to BC ‘manually’—i.e. not through the standard claim submission process. The MSP is managed by the Medical Services Commission. More information is provided in Appendix 1. Also see ALTERNATIVE PAYMENTS PROGRAM; MEDICAL SERVICES COMMISSION.

Natural breaks (Jenks) categorization

Natural breaks categorization uses the Jenks method, an optimization algorithm, to group data into classes of similar value. The algorithm forms groups that are internally homogeneous while assuring heterogeneity among classes. In situations where only one local health area fell into a category by itself, the outlier value was removed, the natural breaks were recalculated, and the outlier value assigned to the relevant category. Also see CHOROPLETH MAPS.

Older adults

Percentage of the population aged 65 years or older. Calculated at the local health area level for 2001 from PEOPLE 28. Also see OLDER ADULTS LIVING ALONE; POPULATION.

Older adults living alone (Website/CD only)

The percentage of the population aged 65 years or older (older adults) and living alone was calculated by dividing the number of older adults living alone in an area by the population of older adults in that area. Both numerator and denominator were derived from the 2001 Census, Statistics Canada for this profile (note difference with Older Adults profile).

Census estimates were derived from a 20% sample of households in the province (where one in every five households provides more detailed information to correct and extend general census results). Because this sample did not include individuals who lived in “collective dwellings” (e.g. lodgings, rooming houses, hotels, nursing homes, hospitals), this profile is likely to underestimate the number of older adults living alone. For the 2001 Census, an estimated 48,690 people in BC lived in collective dwellings, of which 34,600 lived in health care and related institutions.⁴⁹ Also see OLDER ADULTS; POPULATION.

Population

Local health area denominator populations are derived from PEOPLE (Population Extrapolation for Organizational Planning with Less Error),¹⁵ BC Stats (unless otherwise stated). PEOPLE is developed from information provided by Statistics Canada and aims to correct for known census under-counting.⁵⁰ Population counts and projections are updated on an annual basis with PEOPLE 28, providing population counts as of July 1st 2001, being the most current version. PEOPLE 28 was developed with information from the 2001 Census, Statistics Canada.

2001 Census data are used to calculate denominator populations for three profiles: Population Density, Older Adults Living Alone and Location of General Practice Providers. Also see Appendix 2 (Website/CD only).

Population density

Population density was mapped using dissemination area data from the 2001 Census, Statistics Canada. One dot equals one hundred residents. Population figures are given for all urban areas in BC with a population greater than 2,000. Urban areas, as defined by Statistics Canada, have a minimum population concentration of 1,000 persons and a population density of at least 400 persons per km².

Because most of the Lower Mainland is treated as one urban area (Vancouver), it was divided into its component census subdivision (CSD) populations. A CSD is defined as a municipality or area deemed to be equivalent to a municipality for statistical reporting purposes, such as an Indian reserve.⁵¹ CSD populations were not used for the entire province because they are often misleading. For instance, a large part of a municipal population could be rural or semi-rural. Urban area population figures more accurately reflect the actual populations of towns and cities in BC. Also see DISSEMINATION AREA; POPULATION.

Population growth (Website/CD only)

Population growth was determined by calculating the percentage change in population size for each local health area between 1991 and 2001 from PEOPLE 28. Also see POPULATION.

Projected population growth was calculated for the period 2001 to 2011, from PEOPLE 28. (Website/CD only).

Potential years of life lost (PYLL) (Website/CD only)

Potential years of life lost (PYLL) is calculated by summing the number of years of life 'lost' when a person dies before age 75 and gives a high weight to early deaths:

a death at age 15 years adds 60 to the overall measure (75 minus 15), while a death at 74 years adds a value of only one (75 minus 74).

The PYLL index is expressed as a ratio of a region's observed PYLL to that which would be expected for the region if it had a pattern of early deaths consistent with that of the province overall. The provincial PYLL index equals 1.00. Values greater than 1.0 indicate a region has more deaths at younger ages (lower health status); values below 1.0 indicate fewer deaths at younger ages (higher health status).

The PYLL index was calculated by the BC Vital Statistics Agency based on five years of aggregated data (1997-2001).⁵² Several local health areas were aggregated to provide stable rates in thinly populated areas: Kootenay Lake/Nelson (6/7); Grand Forks/Kettle Valley (12/13); Campbell River/Vancouver Island West (72/84); and Stikine/Telegraph Creek (87/94). Data for the local health areas of Surrey/South Surrey (201/202) were not disaggregated.

Premature mortality rate (PMR)

The premature mortality rate (PMR) is calculated by dividing the number of deaths among people aged 0 to 74 in an area by the total population aged 0-74 in that area, and is reported as a rate per 1,000 population. PMR is based on mortality incidence annualized over 1996-2000, and is indirectly standardized to account for age/sex differences in populations.

Mortality data was available from the BC Vital Statistics Agency. To this were added out-of-province deaths of BC residents, as identified in hospital separations data from the BC Ministry of Health Services. Any deaths with unknown age, sex, or local health area were excluded. Denominator populations (2001) were derived from PEOPLE 28. Also see POPULATION.

Primary health care (PHC)

For most people, primary health care is the first point of contact with the health care system, often through a family physician. It is also where patients in need of more specialized services are linked to secondary care. PHC is where short-term health issues are resolved, the majority of chronic health conditions are managed, and where health promotion and education efforts are undertaken. It can involve a broad range of services such as screening, health information, examinations, vaccinations, prenatal care, home visits, nutritional counseling, drug dispensing, palliative care and mental health services. Physicians, dietitians, home care

workers, nurses, occupational therapists, physiotherapists, pharmacists, social workers and other health care workers all deliver PHC services.

Primary health care organizations (PHCOs)

Primary health care organizations (PHCOs) were established in British Columbia in 1998, originally as primary care demonstration projects. PHCOs now operate as an integral part of the primary health care system in BC. More information is provided in Appendix 1.

PURRFECT

PURRFECT (Population Utilization Rates and Referrals for Easy Comparative Tables) is a BC Ministry of Health Services database that captures acute care, MSP, mental health and continuing care services.⁵³ All data in PURRFECT is for the latest available five-year period and does not include information for the current year to date. More information is provided in Appendix 1.

Socioeconomic risk index

The socioeconomic risk index is calculated by BC Stats by assigning relative weights to various measures reflecting social and economic conditions.³² The index is intended only to flag regions that may be experiencing higher levels of socioeconomic stress relative to neighbouring areas. The index is compiled from the following variables (including their relative weight), spanning up to five years of data (1997-2002):

Variable	Relative weight	Year of data
Health problems (20% of overall index)		
PYLL due to natural causes per 1,000 pop.	0.40	1997-2001
PYLL due to external causes per 1,000 pop.	0.30	1997-2001
PYLL due to suicide/homicide per 1,000 pop.	0.30	1997-2001
Economic hardship (30% of overall index)		
% pop. 0-64 on income assistance < 1 year	0.25	Sept 2002
% pop. 0-64 on income assistance > 1 year	0.50	Sept 2002
% seniors receiving maximum guaranteed income supplement	0.25	2002
Crime (20% of overall index)		
Serious violent crime rate per 1,000 pop.	0.35	1999-2001
Serious property crime rate per 1,000 pop.	0.50	1999-2001
Number of serious crimes per police officer	0.15	1999-2001
Education concerns (20% of overall index)		
% pop. 25-54 without completed post-secondary	0.40	2001
% 18-year olds who did not graduate	0.30	99/00-01/02
Mathematics 12 provincial exam non-completion	0.10	99/00-01/02
% below standard for grade 4 reading, writing & math	0.10	99/00-01/02

Children at risk (5% of overall index)		
% of children <19 on income assistance < 1 year	0.10	Sept 2002
% of children <19 on income assistance > 1 year	0.20	Sept 2002
Children in care per 1,000 pop. 0-18	0.10	2002
Infant mortality per 1,000 live births	0.20	1997-2001
% below standard for grade 4 reading, writing & math	0.20	99/00-01/02
Criminal charges per 1,000 pop. aged 12-17	0.20	1999-2001
Youth at risk (5% of overall index)		
% youth 19-24 on income assistance < 1 year	0.20	Sept 2002
% youth 19-24 on income assistance > 1 year	0.40	Sept 2002
% 18-year olds who did not graduate	0.20	99/00-01/02
Total serious crime rate per 1,000 pop.	0.20	1999-2001

Denominator populations (2001) were derived from PEOPLE 28. This index was calculated at the local health area only: no HSDA-level information is available.

Vancouver and Surrey were not partitioned into their component local health areas in the BC Stats methodology. Additionally, BC Stats excluded the following LHAs in their index calculation due to small numbers: Queen Charlotte (50), Snow Country (51), Central Coast (83), Vancouver Island West (84), Stikine (87), and Telegraph Creek (94).

Since the completion of our analyses, BC Stats has released (March 2004) an updated 2003 version of their socioeconomic status ranking.³³ Also see CHILDREN AT RISK INDEX; POPULATION.

Supply of general practice providers

Supply of general practice providers is reported as an age/sex-standardized rate of full-time equivalent (FTE) general practice providers per 10,000 population. Data used to estimate the supply of general practice providers were obtained from 2000/01 Medical Services Plan practitioner and billing files, 2000/01 Alternative Payments Program files and 2000/01 primary health care organization files. MSP fee-for-service providers were estimated using type of practice methodology to identify provider specialty and FTE contribution. Denominator populations (2001) were derived from PEOPLE 28.

Several local health areas were aggregated due to a recognized problem with the allocation of APP funds to specific local health areas at the expense of neighboring regions. The affected LHAs are: Bella Coola/Central Coast (49/83); Snow Country/Stikine/Telegraph Creek (51/87/94). Full derivation of this profile is detailed in Appendix 1. Also see ALTERNATIVE PAYMENTS PROGRAM; MEDICAL SERVICES PLAN; PRIMARY HEALTH CARE ORGANIZATIONS; POPULATION.

Supply of nurses (Website/CD only)

Supply of nurses is reported as a crude rate of nurses per 10,000 population. Registered nurses, registered psychiatric nurses, and licensed practical nurses are included. Data on the number of nurses was derived from *Inventory Update 2000: A Regional Analysis of Health Personnel in the Province of British Columbia*.⁵⁴ Denominator populations (2000) were derived from PEOPLE 28.

The majority of nurses work in acute health care rather than primary health care. Acute health care facilities are shown sized by weighted cases, which are used as a measure of resource intensity and include total inpatient, surgical day care and rehabilitation service activity. Information on the relative acuity, severity and complexity (all age groups) is used to weight cases. Only hospitals with more than 1,000 weighted cases are included. Data on weighted cases for 2000 was derived from PURRFECT 7.1 (Hospital comparative reports 3.10).

Vancouver and Surrey were not partitioned into their component local health areas in this methodology.

Appendix 1: General practice profiles

Primary health care (PHC) is often thought of as a professional discipline (e.g. family physician, nursing), a location of care (e.g. walk-in clinic or emergency room), or, as we consider it for the purposes of our research program, a service function. When profiling PHC it is important to clearly identify whether the measure is based on service type, provider type and/or location of care.

For this report we made a deliberate decision to move away from the terms typically used to describe general practitioners and/or family physicians. Researchers and analysts in the province have historically, and correctly, used these terms when referring to physicians who hold these specialty designations. But these terms have also been used to refer to physicians who predominantly bill for services in the general practice section of the BC Medical Services Commission (MSC) payment schedule. These physicians may hold designations in pediatrics, internal medicine or other specialties.

In this report, we have profiled services funded through three sources:

- fee-for-service payments made through the BC Medical Services Plan (MSP);
- primary care services funded through the BC Alternative Payments Program (APP); and
- primary care services funded through primary health care organizations (PHCOs).

Expenditures attributed to the latter two funding arrangements may relate to PHC services provided by both physicians and other health care professionals. This, and ongoing work in our research program, has convinced us of the need for a new lexicon to profile PHC in British Columbia. This report takes the first step by introducing new terms tied closely to the methodology we used to define PHC providers and the services they deliver:

General practice providers: Defined by physician **type of practice**, on a “head-count” basis, and may include other health care providers funded by the APP and/or

PHCOs. (See Supply of general practice providers; Location of general practice providers.)

General practice services: Defined by **fee item specialty**, on a “dollar” basis. (See Expenditures on general practice services; Access to general practice services.)

We specifically chose NOT to use “family physicians” or “family physician services” in these profiles. Both type of practice and fee item specialty methodologies identify physicians based on the types of services they deliver, rather than their specialty designation.

In this and future CHSPR reports relating to PHC, we will reserve the term “family physician” to describe providers identified using the **most recent registered specialty** methodology. This methodology is not used in the profiles in this report.

These definitions are by nature still emerging and we will be developing and refining them further throughout our research program. However, a core theme is our desire to distinguish physicians on the basis of the **way they actually practice**, and to use the term “general practice providers” when a profile includes both physicians who have a general practice and other PHC providers.

We know that the methodology used to measure PHC services and providers substantively influences the findings, and therefore the policy implications, of our research. Future CHSPR reports will further refine and define the PHC lexicon in British Columbia, to improve communication in the policy, practice and research community and our understanding about the province’s PHC system.

Background information on types of methodology and physician payment in British Columbia is detailed below, followed by a description of the approach used for each general practice profile.

Identifying physicians

Physician specialties can be identified in a number of ways. The most familiar methodology is by **most recent registered specialty (MRRS)**, as designated by the physician's most recent specialty registration with the MSP. This is a self-reported measure of each physician's licensure and registration status. This methodology is not used in this report, but more information is provided below on how this methodology compares to type of practice.

In contrast, **type of practice (TOP)** is a methodology that uses physician billing information to categorize each physician based on the way they actually practice. For example, a physician could report their MRRS as a family physician, but may actually have a billing pattern more closely representing emergency medicine. He or she would be identified as an emergency medicine physician by type of practice, despite their registered status as a family physician. By comparison, a physician could report their MRRS as pediatrics, but may actually have a billing pattern more closely representing a general practice physician. He or she would be identified as a general practice physician by type of practice, despite their registered status as a pediatrician. BC's MSP uses the TOP methodology for creating practitioner profiles.⁵⁵

Fee item specialty is a third type of methodology that identifies different types of services. All services covered under the MSP are identified by particular fee items in the MSC payment schedule used by fee-for-service physicians. These fee items are grouped into broad categories and different types of physicians are said to "own" a section for the purposes of fee negotiations. For example, fee item "0532 electrocardiogram and interpretation for children under 2 years of age" is owned by specialty 14-paediatrics. Specialty 00-family physicians own fee items in the "general practice" category. This "ownership", however, does not imply exclusive billing: any practitioner billing under the MSP can bill any applicable fee item. The use of fee item specialty methodology,

therefore, captures all billings in a particular category of the MSC payment schedule, regardless of the type of physician who provided those services. PURRFECT, a BC Ministry of Health Services database uses fee item specialty methodology to identify services provided by general practitioners, even though these services may be delivered by physicians who have other MRRS specialty designations.

For the purposes of this report, the important difference between TOP and fee item specialty is that TOP starts by looking at physicians and how they bill, and then decides how they should be categorized based on their billing pattern. We describe this as a "head-count" basis and therefore include these physicians when identifying "general practice providers." Fee item specialty, however, starts by looking at the dollars spent in a particular category of the MSC payment schedule, rather than at the physicians who bill these dollars. We describe this as a "dollar" basis and therefore include these expenditures when calculating "general practice services."

Sources of physician payment data in British Columbia

A number of different methods of physician payment are used in British Columbia. The majority of BC physicians are paid under the MSP fee-for-service system. However, a number of physicians are paid on a salaried/sessional basis under the APP. The APP also funds service agreements with organizations, from which physicians and other providers receive remuneration. Examining physician supply and expenditure using only MSP data can lead to under-estimates for particular areas of the province (e.g. rural and remote) and or particular services (e.g. emergency room services) that rely more heavily on the APP. We have invested significant time and energy into developing a methodology that captures all available payment data for relevant profiles. The results are presented in this report for the first time.

MSP fee-for-service: The majority of BC physicians are paid on a **fee-for-service** basis under the MSP. Fee-for-service physicians are paid a specific fee for each service provided for each patient, and physician income from this source ultimately depends on the number and types of services he or she provides. In this report, we commonly refer to fee-for-service data simply as MSP data.

Data on MSP fee-for-service payments to physicians can be obtained directly from MSP practitioner and billing files (which include most recent registered specialty as well as type of practice identifiers for each physician), or through PURRFECT (which uses fee item specialty methodology to calculate physician expenditures).

APP: Alternative payments are used to remunerate physicians who receive salary and sessional payments, and to fund service organizations that may hire physicians and other health care providers. The APP is administered from within the BC Ministry of Health Services.

- **Sessional payments:** Sessional payments are time-based rather than service-based. Sessional fees are negotiated between the BC Medical Association and the MSC.

- **Service agreements:** Under a service agreement, APP funds an agency that then contracts or directly employs individual physicians (or a mix of health care practitioners) for the delivery of services. Service agreements are the most common method of payment under the APP.
- **Salaried payments:** This type of funding arrangement remunerates salaried physicians.

Data on all types of APP payments to physicians and service organizations are obtained directly from the APP.

PHCOs: Primary health care organizations were established in British Columbia in 1998. Originally primary care demonstration projects, PHCOs are now an integral part of the primary health care system. In 2000/01, payments of \$4,068,630 outside of the MSP fee-for-service system and APP were made to primary health care organizations, as indicated at [Table 1](#).

Data on PHCO encounters are obtained directly from the BC Ministry of Health Services.

Table 1: Summary of payments to primary health care organizations (by local health area location) to 2002/03

LHA	1999/2000	2000/2001	2001/2002	2002/2003
Langley (35)	\$789,917	\$1,549,386	\$1,853,873	\$1,906,846
Kamloops (24)	\$401,383	\$672,396	\$830,051	\$1,094,554
Vancouver – Midtown (165)	\$258,340	\$704,603	\$940,164	\$1,003,856
Vancouver – City Centre (161)	\$368,137	\$817,236	\$1,020,289	\$1,178,272
Greater Victoria (61)	\$162,504	\$325,008	\$374,177	\$594,766
Agassiz-Harrison (76)	-	-	-	\$745,532
TOTAL	\$1,980,281	\$4,068,630	\$5,018,555	\$6,523,825

Notes: Values in 2002/03 were obtained during year-end calculations. Values for prior years were obtained by summing level two adjustments.

Some payments may have been made outside the claims system.

Expenditures on general practice services profile

This profile includes MSP fee-for-service expenditures, APP-funded primary care services, and payments made to PHCOs. MSP fee-for-service expenditures were derived using the fee item specialty methodology to count dollars spent on services billed in the general practitioner category of the MSC payment schedule. These three data sources are compiled to develop a comprehensive profile and reported as per capita expenditures on general practice services.

Data source: PURRFECT (2000/01)

PURRFECT is a BC Ministry of Health Services database that captures acute care, MSP, mental health and continuing care services. PURRFECT aggregates MSP services based on all fee items owned by a given physician specialty. Data used to calculate expenditures on services billed from the general practice category of the MSC payment schedule were obtained from PURRFECT 8.1 (MSP referral and utilization rates programs), using the general practitioner (0) category. This category includes general practitioners (0), public health and community medicine (21) and occupational medicine (23). In 2000/01, general practice service expenditures identified through MSP billing totaled \$649 million; the latter two groups billed just \$4,469 dollars of this amount.

The PURRFECT MSP referral application provides utilization rates and detailed client and physician referral patterns by year and geo-region. Referral analysis is based on the patient's place of residence (patient local health area) and physician's billing address (practice local health area) as recorded by MSP. Expenditure amounts include the paid amount, Northern isolation allowance, rollback, fee item rollback and interest. Only fee-for-service payments made through the MSP are identified. Midwife, WCB and ICBC claims, services to non-residents and out-of-province payments to BC residents are all excluded. Crude rates are age-standardized using indirect standardization using 20 age groups.

We converted the age-standardized rate per 1,000 population provided by PURRFECT into a per capita rate. Age-standardization was based on PEOPLE 27 (2001) population counts. The per cent difference between the crude rate and the age-standardized rate was calculated to estimate the effect of age-standardization.

Data sources: Alternative Payments Program and PHCO (2000/01)

To capture the general practice services provided outside the MSP, we used data from the APP, and PHCO files provided by the BC Ministry of Health Services.

From the APP, all dollars allocated to programs designated as "primary care" were included, with the exception of the dollars allocated to the Canadian Red Cross. In 2000/01, \$12,234,323 was paid to primary care programs through the APP, of which \$340,116 was for the Canadian Red Cross.

In 2000/01, payments of \$4,068,630 were made to PHCOs (see [Table 1](#)).

We assumed that APP "primary care" and PHCO services were utilized by patients living in the LHA to which payments have been designated (exceptions detailed below).

CHSPR profile using combined data sources

The crude rate of expenditures on general practice services per capita was calculated based on the sum of MSP data from PURRFECT, APP "primary care", and PHCO payments assigned to each local health area, divided by the size of the population of that local health area. Denominator populations were derived from PEOPLE 27.

To age-standardize the crude rates, we used the indirect method based on expenditures related to MSP-based general practice services by age using 20 age categories. The impact of age-standardizing for each local health area was determined as a percentage increase or decrease. This measure of change was then applied to APP and PHCO

crude estimates to convert them to age-standardized expenditures per capita.

Several local health areas were aggregated due to a recognized problem with the allocation of APP funds to specific local health areas at the expense of neighbouring regions. The affected LHAs are Bella Coola/Central Coast (49/83); Snow Country/Stikine/Telegraph Creek (51/87/94). Surrey/South Surrey (201/202) are also aggregated because, as previously discussed, PURRFECT 8.1 does not disaggregate their data into separate local health areas.

In 2000/01 age-standardized expenditures for general practice services in British Columbia were approximately \$665 million or \$164 per capita.

Access to general practice services profile

This profile measures the utilization of general practice services using fee item specialty methodology to count services billed in the general practice category of the MSC payment schedule. However, this profile uses a single data source only—MSP fee-for-service data from PURRFECT 8.1 (MSP referral patterns and LHA MSP referral rates, 2001/02 data). (See Expenditures on General Practice Services profile for details.) APP and PHCO data are not included.

Geographic access to general practice services is reported as a percentage of general practice services that patients received in either their own or a geographically adjacent local health area. Local health areas where more than 10% of general practice services were provided outside the FFS system were excluded from analysis. Local health areas were considered geographically adjacent unless separated by a body of water with no connecting tunnel or bridge.

In British Columbia in 2001/02, 66% of general practice services were provided to patients in their own local health area and an additional 19% in a geographically adjacent area. Overall, 84% of general

practice services were provided in patients' own or a geographically adjacent local health area.

Supply of general practice providers profile

This profile measures the supply of general practice providers using type of practice methodology to estimate MSP fee-for-service providers on the basis of the type of services they deliver. Estimates of providers who receive funds through the APP and PHCOs are also included. These three data sources are compiled to develop a comprehensive profile and reported as an age/sex-standardized rate of full-time equivalent (FTE) general practice providers per 10,000 population.

Data source: MSP practitioner and billing files (2000/01)

Type of practice methodology is used to identify provider practice patterns. To count the number of MSP providers, we identified physicians who had a BC postal code, received remuneration in the period, and had a type of practice entitled general practice (type of practice code 00). For the purposes of this report, we did not include physicians with other primary care-relevant type of practice designations. For example, physicians assigned to the type of practice groups entitled “GP-Alternative Payments at 50%+”, “GP-Miscellaneous” or “PHCO physician” (type of practice codes 61, 55, and 63 respectively) were not included in this MSP-based analysis. CHSPR will profile and release information about the number of physicians with these types of practice in 2005.

The type of practice designation, and the full-time equivalent contribution that each provider makes is used to estimate the supply of fee-for-service providers. Full-time equivalent status is a workload value that ranks providers relative to their peers on the basis of practice income. This methodology for calculating FTEs is dictated by the Health Canada definition.⁵⁶ The benchmark values for FTE calculation were derived from, and applied to, the study population described here. Unlike the

Health Canada methodology, the benchmark values were calculated using information from all doctors rather than just those who billed in all four quarters in the period. Paid services provided to BC residents were included, and remuneration for services to out-of-province patients was excluded.

Data source: Alternative Payments Program and PHCO (2000/01)

To capture the involvement of general practice providers paid outside the MSP, we used data from the APP, and PHCO files provided by the BC Ministry of Health Services.

From the APP, all dollars allocated to primary care service agreements were included, with the exception of the dollars allocated to the Canadian Red Cross (see Expenditures on General Practice Services profile for details). The number of FTE general practice providers receiving funds from this source was then estimated by dividing the APP dollar amount allocated to each local health area by the average dollar value of one FTE as calculated using the MSP billings in British Columbia in 2000/01. Since APP funds service organizations, these expenditures are used to remunerate providers and, potentially, to fund other expenses such as travel. Therefore, our estimates of FTE providers in local health areas with a high proportion of APP expenditures (such as in the north) may overestimate supply. The magnitude of overestimation is related to the extent that APP expenditures are not used for remuneration.

In 2000/01, payments of \$4,068,630 were made to PHCOs (see Expenditures on General Practice Services profile for details). The number of FTE general practice providers receiving funds from this source was then estimated by dividing the PHCO dollar amount allocated to each local health area by the average dollar value of one FTE as calculated using the MSP billings in British Columbia in 2000/01.

CHSPR profile using combined data sources

The crude rate of FTE general practice providers per 10,000 population was calculated based on the sum of FTEs derived from MSP practitioner and billing files (fee-for-service physicians), APP “primary care” programs, and PHCO payments for each local health area, divided by the size of the population of that local health area. Denominator populations were derived from PEOPLE 28 (2001).

To age- and sex-standardize the crude rates, we used the indirect method based on the utilization of MSP-based general practice services by age and gender using 20 age categories. The impact of age- and sex-standardizing for each local health area was determined as a percentage increase or decrease. This measure of change was then applied to APP and PHCO crude estimates to convert them to age- and sex-standardized rates per 10,000 population.

Several local health areas were aggregated due to a recognized problem with the allocation of APP funds to specific local health areas at the expense of neighbouring regions. The affected LHAs are Bella Coola/Central Coast (49/83); Snow Country/Stikine/Telegraph Creek (51/87/94).

There were an estimated 3,852 general practice providers and 3,558 FTE general practice providers in British Columbia in 2000/01, resulting in an age/sex-standardized rate of 8.67 FTE general practice providers per 10,000 population.

Location of general practice providers profile

This profile determines the location of general practice providers using type of practice methodology to identify physicians by MSP billing address. This profile uses a single data source only—MSP practitioner and billing files, 2001/02 data. Note that only general practice providers, not FTE general practice providers, were identified. Also, this profile uses more recent MSP data, compared to the

Supply of General Practice Service Providers profile, which uses 2000/01 MSP data for consistency in the combined data sources.

APP and PHCO data are not included. This results in clear under-estimates of the geographic location of general practice providers in areas that rely heavily on receipt of primary care services through the APP, such as most of the local health areas in the Northwest health services delivery area, and the local health areas of Bella Coola and Central Coast.

Geographic location of general practice providers is reported using the billing address from the MSP practitioner file. In large urban areas, location was determined by six-digit postal code. In more rural areas, location was determined by the town or city identified in the billing address.

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- 19 Refer to [Appendix 1](#) for more detailed methodology and references.
- 20 Refer to [Definitions and technical notes](#) for more detailed methodology and references.
- 21 CHSPR will be releasing a report in 2005 that more thoroughly explores use of PHC and related services (e.g. emergency room services) through the use of administrative data regarding fee-for-service and alternative payments.
- 22 Per capita age/sex-standardized emergency room visit rates were multiplied by \$100 to estimate per capita expenditures on this type of PHC service. Emergency room visit rates for

- local health areas that receive funding for these services from alternative sources were estimated on the basis of the demographic and health status of the local health area population.
- 23 Per capita age-standardized home-based professional services visit rates were multiplied by \$50 to estimate per capita expenditures on this type of PHC service; per capita age-standardized home support service hours were multiplied by \$25 to estimate per capita expenditures.
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