



UBC CENTRE FOR  
HEALTH SERVICES AND  
POLICY RESEARCH

# Home Health Services in British Columbia

## A Portrait of Users and Trends Over Time

October 2008



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Library and Archives Canada Cataloguing in Publication

Home health services in British Columbia [electronic resource] : a portrait of users and trends over time.

Includes bibliographical references.

Type of computer file: Electronic monograph in PDF format.

ISBN 978-1-897085-14-1

1. Home care services--Utilization--British Columbia. 2. Older people--Home care--British Columbia. 3. Older people with disabilities--Home care--British Columbia. I. University of British Columbia. Centre for Health Services and Policy Research

RA645.37.C3H647 2008 362.1409711 C2008-904512-2

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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 advance 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. The Centre's work is:

- Independent
- Population-based
- Policy relevant
- Interdisciplinary
- Privacy sensitive

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.

## Funding and support

CHSPR receives core funding from the BC Ministry of Health Services, and ongoing support from the University of British Columbia and the UBC College of Health Disciplines. This enables the Centre to focus on research that has a direct role in informing policy and health reform, and facilitates CHSPR's continuing development of the BC Linked Health Database.

Our researchers are also funded by competitive external grants from provincial, national and international funding agencies. They include the Canadian Health Services Research Foundation, the Canadian Institutes of Health Research, the Commonwealth Fund, Health Canada, the Michael Smith Foundation for Health Research, and WorkSafeBC.

## Data services: BC Linked Health Database

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 a de-identified 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 Services and other professional bodies, and acts as the access point for researchers wishing to use these data for research in the public interest.



## Working Relationships

This report reflects a close and ongoing working relationship among researchers based at the Centre for Health Services and Policy Research at UBC, the Home and Community Care and Performance Accountability branch at the BC Ministry of Health Services, the Provincial Home and Community Care Council and its Standing Committee on Home Health Services. The scope of this project, research objectives and research questions were agreed on at the outset. Following this, the researchers took full responsibility for data manipulation and analysis, with regular contact and sharing of work in progress with other stakeholders. A set of draft final tables was presented to the Ministry of Health Services, with time built in for discussion of possible interpretations of the findings, including limitations and peculiarities of the data.

What is presented here reflects these many interactions, but the responsibility for accuracy of data analysis and the resulting conclusions remain solely with the researchers. Funding for this work was provided by the BC Ministry of Health Services.

## Acknowledgements

We are grateful for the excellent collaborative relationships developed with the BC Ministry of Health Services, the Provincial Home and Community Care Council and its Standing Committee on Home Health Services. Bonnie Hallas, Karen Archibald, Martha Burd and Katie Hill in particular dedicated a great deal of time to this project, and made sure we were aware of data limitations and policy decisions that could affect our analyses.

From the Centre for Health Services and Policy Research, Kerry Kerluke helped with initial analyses of data, Chris Balma assisted with timelines and production plans, and Denise Morettin helped to shepherd our data access request through the approval and data extraction processes. A special thank you goes to Dawn Mooney who produced all of the charts and figures in the report.

Marcus Hollander, Steven Lewis and Patricia Baird provided very useful comments on an earlier draft of this report, and through these helped to improve its organization and clarity.

Finally, many thanks to Alicia Priest for her extraordinary editing skills.

## Executive Summary

Home health services are often provided to people who are frail and may be reaching the end of their lives. Their purpose is to help people remain in their own homes as long as possible. These services are part of a continuum of health care that ranges from ambulatory to inpatient acute care. This report focuses on services reflected in data that are routinely provided by Health Authorities to the BC Ministry of Health Services. The Ministry does not track the full range of health care services used by seniors dwelling in the community. Health authorities provide some services that they do not report, such as case management. Community-based agencies do not report to the Ministry on the support services they provide.

This is a descriptive report. Its primary purpose is to describe users of home health services, and determine whether and how they differ between Health Authorities/Health Service Delivery Areas and from community-dwelling non-users. That intention led us to the following research questions:

- What proportion of BC seniors use home health services and how has this changed over time?
- What is the demographic profile (age, sex, income, and health status) of long-term home health services users who are seniors (65+) and how does this differ from community-dwelling seniors who do not use home health services?
- How has the profile of long-term home health service users with respect to age, sex, income, usage by region, and health status changed over time?
- What types of services are used by long-term home health services users and how has this changed over time?
- What is the relationship between the use of home health services and the use of other health care services such as visits to physicians, diagnostic services and admissions to hospital?

The majority of data analysed for this report derive from the BC Linked Health Database, which has been devel-

oped by the UBC Centre for Health Services and Policy Research in cooperation with the BC Ministry of Health Services. Analyses focus on individuals aged 65+ in 1995/96 through 2004/05 who are long-term users (90+ days) of home health services. This was a period of substantial policy change in the home health services sector and in the broader health care system (see Figure 1 for a summary of policy changes). Many changes in patterns of service use occurred over this time, but we offer the following as a summary of some of the most important.

### Fewer seniors receive home health services

- Over a 10-year period, the proportion of seniors using publicly-funded home health services dropped by thirty percent. In 2004/05, nine percent of British Columbians aged 65 and over received publicly-funded home health services at some time during the year, compared to 13 percent in 1994/95.
- The decline in the proportion of the population using home health services is the result of a decrease in long-term users. In 1994/95, nearly one in 10 seniors (more than 49,000 individuals) qualified as a long-term user of home health services. By 2004/05, however, this had shrunk to one in 17 seniors. This appears inconsistent with policy, which emphasized providing more community-based services in an effort to keep people out of hospitals and long-term residential care facilities.
- Changes over time must be interpreted with caution, because there is no assurance that the people receiving services or the services provided at the start of the study were the “right” ones.

### Over time, the typical long-term user is a woman who becomes both older and more medically frail

- Long-term users were more likely to be women, have a lower income, and a greater number of major chronic diseases compared to community-dwelling seniors who do not use home health services.



- By the end of the study period, the age mix of long-term users of home health services shifted from being dominated by 80 to 84 year olds (one in four users in 1994/95) to 85 to 89 year olds (one in four users in 2004/05).
- An overall decrease in the likelihood of being a long-term user occurred across all health status groups; that is, while the morbidity profile of the long-term user group increased, the likelihood of being a long-term user given a certain level of morbidity was lower in 2004/05 compared to 1994/95. This change is consistent with expectations.

### Variations in long-term home health service use by neighbourhood income and region narrow over time

- The decrease in long-term home health service use was disproportionately greater among those in the lower income groups.
- Variations in long-term use by region narrowed over time, but there remains an approximately two-fold variation in the likelihood of being a long-term user in 2004/05 by Health Service Delivery Area.

### Over time, long-term home health service clients use more home care and less home support

- Over time, long-term home health service clients use more home care and less home support, suggesting that home health services now have a greater clinical or teaching focus. This change may be consistent with policy changes emphasizing a focus on seniors with greater needs.

### Long-term home health service clients use more physician and hospital services

- Long-term home health service clients use more physician, diagnostic and hospital services. Over time, mean numbers of GP visits increased slightly

for non-users and sharply for all clients of home and community care services.

### Former long-term users are different from non-users

- Former long-term users are more likely to be admitted to hospital than non-users.

These analyses do not cover all services, and they are subject to the normal limitations of the use of administrative data. Nonetheless, the picture painted with these data provides some direction for future research. Possible areas of focus include: assessing the conceptual overlap in information provided by interRAI-HC and the measure of health care morbidity used in the report; adding other data, such as those from PharmaNet, which captures all prescriptions for the population; expansion of the frame of analyses to include assisted living; and assessment of the drivers of the remaining regional variations. Regardless of the specific topic chosen, it is important to maintain a population-based perspective in future analyses, and it would be useful to expand the focus beyond services delivered by the health care system.

Seniors receive a complex mix of services, and this mix appears to be changing over time. Publicly-funded care is increasingly concentrated among individuals who are older and have greater morbidity, which is consistent with policy. At the same time and bearing in mind the limitations of the data used in this report, the decline between 1995/96 and 2004/05 in the proportion of seniors receiving publicly-funded services appears inconsistent with the broad policy objective of providing more community-based care. A better understanding of the range of services both in the public and private sectors, how they currently interact, and how those interactions could be improved, are clear directions for future work.

# 1. Introduction

## Why analyse the use of home health services?

Home health services are often provided to people who are frail and may be reaching the end of their lives. Their purpose is to help people remain in their own homes as long as possible. These services are part of a continuum of health care that ranges from ambulatory to inpatient acute care. This report focuses on services reflected in data that are routinely provided by Health Authorities to the BC Ministry of Health Services. The Ministry does not track the full range of health care services used by seniors dwelling in the community. Health authorities provide some services that they do not report, such as case management. Community-based agencies do not report to the Ministry on the support services they provide.

Some jurisdictions refer to home health services simply as home care. Whatever they are called, they include nursing care, rehabilitation services such as physical and occupational therapy, home support services such as help with bathing and meal preparation, and supports such as adult day programs. All have been used to varying degrees at different times in BC, and their wide range makes assessing their effect on people extremely complex. Nevertheless, it is important to address this complexity as the number of elderly people in BC is increasing, family dynamics continue to change, and policies continue to evolve throughout the health care system. Achieving the goal of a truly integrated continuum of care depends on having a thorough understanding of how home health services fit into health care overall.

## The focus of this report

This report arose out of many conversations with the BC Ministry of Health Services and the Provincial Home and Community Care Council. Interest was expressed in having a data-based analysis of what is happening within the home health services sector in BC, in part because this area has been the focus of many policy changes since the mid-1990s. After reviewing the literature and following several conversations, a few central points emerged.

From the outset, it was evident that we have a lot to learn about home health services. Relatively little is known about how users of home health services differ from non-user residents of BC. Also lacking is a good understanding of the health and functional status of home health clients – BC is only beginning to have data available based on the interRAI-HC standardized clinical assessment instrument. The interRAI-HC tool provides analysis of cognitive status, caregiver supports, functional status and diagnosis. It is used as the basis of care planning and assessment of eligibility and priority for specific services, such as home health services. The tool collects information about people as they enter the system, and on a yearly basis after that. Even with such data there is no ability to compare users and non-users of home health services according to health status. Furthermore, most literature and policy attention has focused on the use of home health services either immediately following or as a substitute for an acute care hospital stay. Less attention is paid to longer term users where the intent is to maintain people in their own homes (1;2). And finally, relatively few studies have tried to quantify how users of home health services interact with and use other parts of the health care system. This report is designed to address these critical information gaps.

This is a descriptive report. Because it is descriptive, we established a few criteria that help to focus our analyses, ensuring that our comparisons make sense. For instance, we restricted analyses to the population aged 65 and over. This does not imply in any way that younger home health service users are less important. While many people under age 65 are functionally disabled in some way and depend on home health services, we felt that younger and older users potentially have very different reasons for using services and different service needs, and therefore mixing them together could obscure important information. Doing justice to the requirements and patterns of care of younger users requires separate analyses. The years of study were 1994/95 to 2004/05. We were not able to include data from 2005/06 because data for that year



were incomplete at the time of our analyses (in the latter part of 2007). Analyses identified several groups who use home health services, including short-term users (< 90 days), long-term users (90+ days) and facility-only users. We also identified people aged 65 and older who do not use any home health services. More detail on these groups is provided in the Methods chapter.

The primary purpose of this report is to describe users of home health services, determine whether and how they differ between Health Authorities / Health Service Delivery Areas and from community-dwelling non-users. That intention led us to the following research questions:

- What proportion of BC seniors use home health services and how has this changed over time?
- What is the demographic profile (age, sex, income, and health status) of long-term home health services users who are seniors (65+) and how does this differ from community-dwelling seniors who do not use home health services?
- How has the profile of long-term home health service users with respect to age, sex, income, usage by region, and health status changed over time?
- What types of services are used by long-term home health services users and how has this changed over time?
- What is the relationship between the use of home health services and the use of other health care services such as visits to physicians, diagnostic services and admissions to hospital?

## **Outline of the rest of the report**

Chapter 2 outlines the literature. Chapter 3 describes the analytic methods used. Chapters 4-8 outline the results. Chapter 9 offers a synthesis of findings, discussion of their implications for policy and suggestions for further research. Chapters 2 and 4-8 begin with chapter summaries.

## 2. Literature Review and Policy History

### CHAPTER SUMMARY

#### Who uses home health services in Canada?

About half of the total number of users of home health services are over 65 years of age. In 2003, an estimated 11% of Canadian adults aged 65 and older received publicly-funded home health services. More women than men used home health services; women make up about two thirds of all users. Older people are more likely than younger people to use home health services: in 2003, 24% of people aged 85 and older used these services. Short-term and long-term users of home health services have different characteristics and use different types of services. Short-term users tend to be younger and use more home nursing care, while long-term users use more home support.

#### Trends over time

Canada-wide, increasing proportions of post-acute patients received home nursing care (from 12% in 1994/95, to 16% in 2003) – studies of administrative data from Ontario and Manitoba found the same trend. Over time, there has been a shift to more specialized home health services – from 1994 to 2003, higher proportions of people who used home health services received nursing care (from 39% to 52%) or personal care (from 11% to 25%), and lower proportions received housework assistance (from 51% to 33%). Greater numbers of people received home health services, but smaller proportions of people needing help received that help. Most of the care that older people receive (an estimated 80%) is provided on an unpaid basis by relatives and friends.

This chapter sets the stage for our empirical analyses. It begins with a discussion of definitions to ensure clarity and consistency of language used in this report compared to other reports and studies. The second section describes three different “functions” or intended outcomes suggested for home health services and how the relative importance of or focus on these functions has changed over time. The third section provides a brief review of the many policy changes that took place in BC between 1994/95 and 2004/05. Finally, the last section reviews the research evidence describing home health service users and their use of different services over time. The strategy used to select the papers and other literature examined here is described in Appendix III.

#### A few definitions

In BC, health and health-related services that are provided to people in their homes are termed home health services. In some other jurisdictions, they are referred to as home care. Home health services have been defined as: *“an array of services which enable consumers incapacitated in whole or in part to remain in their own homes, often*

*with the effect of preventing, delaying or substituting for long term care or acute care alternatives”* (3); and *“an array of services, provided in the home and community setting, that encompass health promotion and teaching, curative intervention, end-of-life care, rehabilitation, support and maintenance, social adaptation and integration, and support for the informal (family) caregiver”* (4). The first of these definitions emphasizes the “why” of home health services, and the second emphasizes the “what”.

Home health services range from a few hours per week of personal care to full nursing and clinical care, such as administering intravenous medications. They are provided both on a short-term basis, in many cases to assist people recently discharged from acute care hospitals, and on a longer-term basis when services are required to enable people to remain in their own homes (5). As well, these services can include palliative care for people at the end of their lives, respite care as a support to informal care providers, and other related services to those in need, although these latter services are not analysed for this report (6).



In Canada, home health services are paid for by both government and individuals and are provided on a for-profit, non-profit and voluntary basis. Friends and family members provide important unpaid services, estimated at 80 percent or more of all care for seniors (7). These services are referred to as “informal care” as opposed to “formal care” which are services provided by individuals who are paid to do so. Paid services can be supplied by a range of providers including physicians, nurses, case managers, rehabilitation specialists and Community Health Workers who help people with basic activities such as bathing, housekeeping and meal preparation. Sometimes, a distinction is made between services provided by physicians, nurses and rehabilitation specialists and those that support basic functioning. The former are often referred to as “home care” and the latter as “home support” services (8;9). Together, the two comprise “home health services”\*

To provide more detail:

**Home care services** (sometimes referred to as “professional services”) comprise clinical case management, direct nursing care, physiotherapy, occupational therapy, speech therapy, respiratory therapy, nutrition, counseling and social work.

**Home support services** (sometimes referred to as “non-professional services”) comprise personal assistance and housekeeping provided by a Community Health Worker. Personal assistance refers to help with activities of daily living such as bathing, dressing and transferring from bed to chair, as well as delegated nursing tasks. Housekeeping refers to the minimum set of household tasks required to maintain a safe and supportive environment such as cleaning, laundry, and meal preparation.

Home health services as defined here do not include services provided to people who are living in assisted living residences or residential care (nursing homes). In

both of these cases, individuals access services by changing their permanent residence, so are out of scope for this report. Palliative and convalescent care can be provided to people in their own homes, but these services were not included in the present analyses.

## Trends in expenditures on home health services

A recent report from the Canadian Institute for Health Information (CIHI) focusing on the level of change in public sector home health services expenditures between 1994/95 and 2003/04 revealed that per capita spending on these services varies extensively among the provinces and territories. Over that decade, constant-dollar public sector home health services expenditures grew on average 6.1 percent per year in Canada (10). At the same time, the number of users of government-subsidized services grew at an average rate of only 1.0 percent per year. This suggests that, nation-wide, each home health services user consumed significantly more resources (either in the form of more services or more expensive services) in 2003 than a decade earlier.

In BC, per capita spending on home health services in 2003/04 was below the national average, as was the average annual growth in real per capita spending on these services (2.4 percent for BC, vs. 6.1 percent nationally). The standardized number of government sponsored home health services users per 1,000 people in BC was about 20, also below the national average of 26.1 per 1,000. In BC, between 1994/95 and 2003/04 there was a decline in the number of users per 1,000 inhabitants, at an average rate of 4.2 percent per year.

These CIHI data are not perfect. They do not include any information on private expenditures on home health services, and the methods of collection and accounting for public expenditures vary between provinces. Home

\* There is also often a distinction made between the two suggesting that the former are “health care” while the latter are “social care”. We do not make that distinction for purposes of this report, because in BC to the extent these services are publicly funded, both are provided by the Ministry of Health Services.

health services are not part of Canadian Medicare, so there are no pan-Canadian standards about coverage or service delivery. Nevertheless, these are the best comparable data available at present, and the trends over time give some broad context for home health service use in BC.

## A framework for thinking about home health services

In recent years several landmark events, agreements, initiatives and demonstration projects have given home health services a more prominent position on the national health policy agenda (1;2;11;12). Between 1997 and 2001, the Health Transition Fund supported approximately 140 initiatives, 45 of which were in the area of home health (12;13). The Commission on the Future of Health Care (the Romanow Commission) recommended making home health an essential service and proposed that a new Home Care Transfer be used to support expansion of the Canada Health Act to include medically necessary services in the areas of home mental health services, short-term post-acute home care, and palliative home care. The Commission also called for the establishment of a national platform of home health services and for improved support for informal caregivers. It underlined the importance of addressing issues of human resources, continuity and coordination of health care and integration with primary health care in order to integrate home health services more fully into the continuum of care (1). The 2003 federal-provincial-territorial Accord on Health Care Renewal promised an increase in Federal transfer payments, and in exchange the provinces agreed to focus on access, quality and long-term sustainability of Canada's health care systems. Targeted reforms included accelerated primary health care renewal and coverage for short-term acute home health services. Further reforms were suggested in 2004, with the First Ministers' 10-Year Plan to Strengthen Health Care (14). The 10-year plan focused on access to primary care and reducing wait times and included funding for short-term acute home care, short-term acute community mental health care and end of life care (15).

In 2005, the Canadian Home Care Association articulated three guiding principles for home health services. First, they pointed to the need for a national framework for home health services that supports accessible, quality services that are publicly administered and responsive to local needs. Second, they described home health services as a critical component of an integrated system of health services. And third, they recognized informal caregivers and volunteers as vital and respected members of the home health services team who should be provided with supports (16).

In Canada, home health services are often divided conceptually into the following three functions:

1. Acute care substitution: services that meet the needs of people who would otherwise be in or be admitted to acute care facilities.
2. Long-term care substitution: services that meet the needs of people who would otherwise require care in a long-term care facility; and
3. Maintenance and preventive function: services that meet the needs of people with health and/or functional deficits in the home setting, thereby maintaining their ability to live independently and, in many cases, preventing health and functional breakdowns, that lead to eventual hospitalization and/or institutionalization (17).

This description originated in a 1990 report from Health Canada (18) and has been used regularly since then as a framework for home health services (10;12;17;19-20). Given this context – particularly the maintenance and preventive functions – home health services can be seen as an integral component of primary care (21), though some have also argued that does not go far enough, that the integration needs to happen both with primary care and “vertically” to include secondary, and tertiary/quaternary care as well (22). Though there are different conceptualizations, it is clear that home health services are being thought of in relation to the overall health care system, with the idea that these services should be patient-cen-



ted and seamlessly integrated into the broader array of health and social services (23).

How well home health services actually accomplish any one of the above functions is poorly understood. The national policy attention given to home health services has revolved largely around its use as a substitute for acute care and not around longer-term needs. The Romanow Commission recommended making home care the next essential service and proposed an expansion of the Canada Health Act to include medically necessary services in the areas of community mental health services, short-term post-acute home care, and palliative home care. But the Romanow report (1) did not address long-term home health services or home support. The 2003 Accord on Health Care Renewal included coverage for short-term acute home health services. Again, the First Ministers' 10-Year Plan to Strengthen Health Care (15) targeted home health for acute care substitution but did not address the maintenance/preventive function of those services.

In fact, the cost-effectiveness of home health services as a substitute for acute care has been fairly well researched, and while study results are not completely consistent, there is evidence that it can generally be regarded as a cost-effective investment (24-26). While some solid evidence suggests that long-term home health services are also a cost-effective substitute for facility care (6;17;27), less attention has been paid to the preventive-maintenance function of home health services (22).

In the course of our work, it became clear that it was impossible to make the distinction between the "long-term care substitution" and "prevention/maintenance" functions of home health services. This may be particularly true because the present analyses use administrative data, collected for purposes of operating a public program, and not in-depth survey data on respondents. Regardless, a general desire to assist individuals with a chronic, acute or life threatening condition to remain living in their own homes will not necessarily distinguish between provid-

ing services to people who would otherwise need to be admitted to long-term or residential care and those for whom services are intended to forestall further functional or health decline. Our definition of "long-term users of home health services", then, encompasses both of these functions, and the literature review below does not attempt to differentiate them.

## Home health services in BC

### The origins of home health services in BC

Publicly-funded home health services have a 30-year history in BC, dating back to 1978, when the government introduced coverage of home nursing care and residential care services. This was followed in 1981 by subsidization of home support services. Historically, long-term use of services required a full assessment of a client's functional needs and social situation (e.g. the availability of informal caregivers). In contrast, short-term use of services could be set up without this full assessment, minimizing the administrative burden when only temporary care was required, such as care following an acute hospitalization (28).

Publicly-subsidized home support services include a user-pay component, based on the client's income. More than 70% of all home support users in BC pay no user fee, due to their low income status.

In BC, home support services are defined as follows: *"Home support provides services to clients who would otherwise be admitted to a hospital, residential care facility or assisted living residence. Home support is also provided on a preventive basis to clients at high risk of institutionalization or of further deterioration in functional or health status."*

*Home support services are one component of a range of community support services. This range of services will vary between health authorities. Health authorities are expected to work collaboratively with community stakeholders, as well as with clients, caregivers and their advocacy organizations in the planning, development, operation and*

coordination of community support services. Examples of voluntary community services include: meal, shopping and home maintenance programs, hospice volunteers, and volunteer drivers and visitors” (9).

Home care services are defined as follows:

“Home care nursing and community rehabilitation are professional services, delivered to clients in the community by registered nurses and rehabilitation therapists. Nursing care is available on a non-emergency basis for British Columbians requiring acute, chronic, palliative or rehabilitative support. Rehabilitation therapists can also provide assessment and treatment to ensure a client’s home is suitably arranged for their needs and safety” (8).

### Policy changes starting in the 1990s

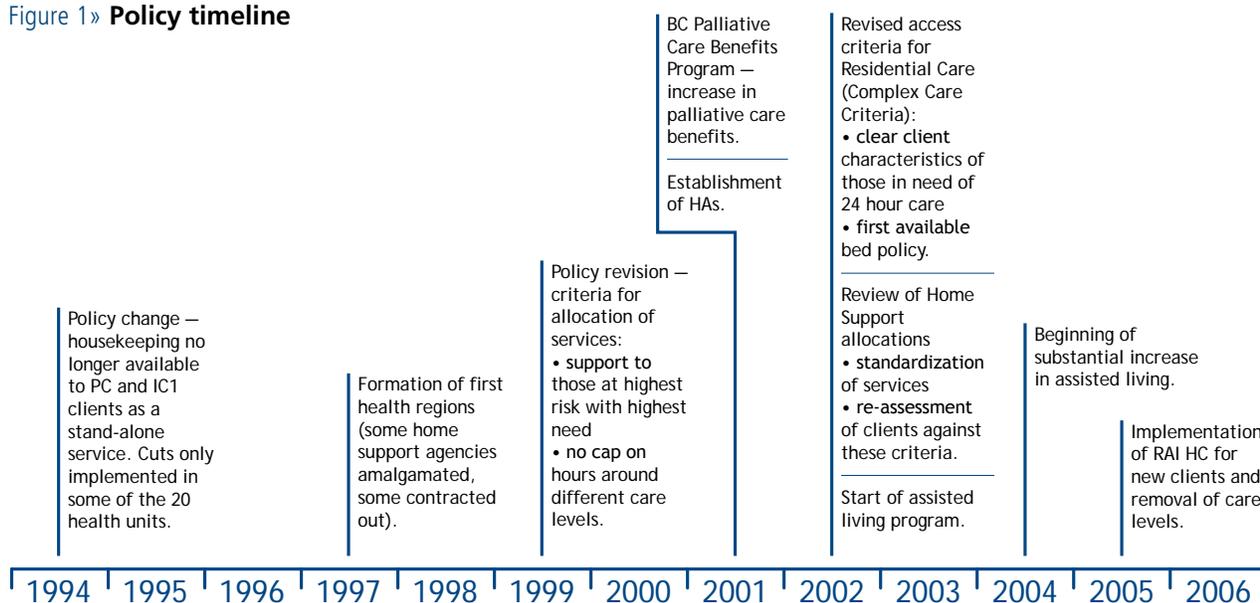
The period covered by this study, fiscal years 1994/95 to 2004/05, was characterized by many policy changes in the BC health care system. In 1991, BC’s Royal Commission on Health Care and Costs, the Seaton Commission, recommended that resources be transferred from hospitals to the community under the “closer to home” theme (29). The stated intent was to create a continuum

of care that would limit unnecessary hospital and residential care stays and expenditures. At the same time, significant declines in transfer payments from the federal government to provinces created fiscal pressure on health care expenditures. By 1994/95, BC government revenues started to feel the pinch and a period of budget restrictions, combined with continuing pressures on utilization of home and community care services began (30). Details about resulting policy changes are provided below. At the same time, the acute care sector was shrinking, at least potentially creating greater demands on home and community care services.

### 1994 » Policy change: cuts to home support and residential care for lower care levels

Working within budget constraints, a 1994 policy change attempted to shift resources to people assessed as requiring higher levels or greater care needs. Stand-alone housekeeping – that is, housekeeping in the absence of other care needs – was available only on an exceptional basis. These changes, most of which occurred in the first six months of 1995 (31), were not implemented uniformly across the province.

Figure 1 » Policy timeline





### **1994/95 – 1997/98 » Health care regionalization**

The 1994/95 fiscal year also marked the beginning of a shift to regionalization that continued through 1997/98. Responsibility for health services was formally transferred to 52 different health entities in 1997. With regionalization came numerous changes, most particularly to home support and a major reorganization of the BC Ministry of Health Services. Some health authorities amalgamated agencies offering home support and residential care services in their areas, effectively taking control of the supply of services. Others continued to contract out, with the result that a variety of mechanisms for delivering continuing care services now exists in BC.

As part of the amalgamation of services into larger health entities (and ultimately to five regional Health Authorities), inconsistencies between service standards were identified. In 1997/98 a process of ensuring consistency in the application of policies for home support was initiated. These reviews took place at different times in different areas of the province.

### **1999 » Policy change: allocation of hours for greatest risk, highest need**

In 1999, a revised policy stated that 'home support hours of service ceilings have been removed'. In their place, health authorities are required to establish policy to ensure that:

- Services are provided on the basis of assessed need; and
- Priority is given to clients assessed at the highest levels of need and risk.\*

### **2001 » Establishment of five regional Health Authorities**

In 2001, 52 regional health entities were consolidated into five regional Health Authorities. The Health Authorities received a global budget from the Ministry of Health Services, and became responsible for management and

delivery of hospital, residential and community-based services in their areas. A sixth Health Authority was also established with responsibility for provincial services such as the BC Cancer Agency and the BC Centre for Disease Control.

### **2001 » BC palliative care benefits program**

In 2001 the BC Palliative Care Benefits Program was introduced. This program removes financial barriers for people who have reached the terminal stage of their disease or illness and want to receive palliative care services at home. Under the program, eligible patients receive coverage of medications used in palliative care through PharmaCare's BC Palliative Care Drug Program, and medical supplies and equipment through their Health Authority. The Palliative Care Drug Program provides coverage of the eligible costs of the prescription drugs and selected over-the-counter (OTC) drugs needed for care and treatment at home. The Palliative Care Benefits Program also covers necessary medical supplies and equipment needed to provide safe and quality palliative care at home, such as needles and syringes, and intravenous therapy supplies such as hydration solutions, tubing, catheters, syringes and needles.

### **2002 » Home and community care redesign**

In 2002 the Province and the Health Authorities announced a three-year plan for Home and Community Care Redesign. The redesign effort was developed to be responsive to views expressed by seniors in BC, and included the objectives of:

- Increasing the number of clients served at home in relation to those in facilities;
- Reducing the use of acute care beds by seniors who could be served in the community; and
- Increasing the number of home care rehabilitation and nursing visits.

\* Letter to Health Authority CEO's, Ministry of Health and Ministry Responsible for Seniors, October 20, 1999.

In addition, access criteria for residential care were revised and clear characteristics of clients who needed 24-hour care laid out. Criteria defining “complex care” were set out in April 2002, and only those who met these criteria were eligible for publicly-funded residential care. To address the issues of long waiting lists, the residential access policy focused priority for placement on those with the highest need and urgency, and outlined provisions to allow those urgently requiring residential care to be placed in the first available and appropriate bed.

Finally, development of new housing and care options began, including assisted living and seniors supportive housing.

### **2002 » Assisted living**

Assisted living is a service delivery model that combines apartments with support services for frail seniors and people with disabilities who can no longer remain at home, yet do not require the 24 hour seven day per week nursing care provided in residential care facilities. In BC, residents pay 70 percent of their after-tax income for publicly-funded assisted living services. They are responsible for the cost of other services they would normally pay for if they lived in their own home.

BC Housing, CMHC and the Health Authorities partnered in the development of publicly-subsidized assisted living and by 2003/04 approximately 350 assisted living units were on-stream for seniors across BC (32).

The analyses in this report end after entry criteria for residential care were modified but before a significant number of assisted living spots were available (there were over 4,000 publicly-funded assisted living units in BC as of June 2008). This may be a particularly idiosyncratic period in the history of this sector in BC. This should be kept in mind when interpreting our results.

### **2005 » New data collection**

Starting in 2005, Health Authorities began implementa-

tion of a new clinical assessment instrument to support care planning and service decisions using internationally validated protocols. The interRAI Home Care assessment tool also allows for client profiles to be evaluated, and compared across jurisdictions, which provides an evidence informed approach to policy and planning.

## **Trends in use and users of home health services**

The remainder of this chapter first provides a basic description from the research literature of the users of and trends in use of home health services in Canada. It then reviews research evidence on the function of home health services according to the three conceptual functions described above.

### **Formal and informal care**

The General Social Survey from 1996, a regular survey conducted by Statistics Canada, focused on “social and community support”, and was developed to examine the dynamic between individuals’ social networks and the help they receive and provide. The data showed that informal networks provided close to three quarters (72 percent) of all the hours of assistance that seniors received. This study suggests that the formal network complements, but does not substitute for the informal network. This finding is consistent with the conclusions of other research (33) that analysed administrative data in Alberta. The authors concluded that this finding has serious implications for services that will be needed in the future. As the population ages and family size shrinks, informal support may become less available. Without the help of children and other relatives, baby boomers facing long-term health problems could find it more difficult to remain in their own homes. Of course, this situation would change if today’s limited informal care network expands and/or if more resources are made available through home health service programs (34).

In 2003, the Canadian Community Health Survey (CCHS) collected detailed information about sources of



formal and informal home health services (35). An estimated 322,000 seniors reported that they had used only formal home care in the past 12 months. Half as many, about 156,000, used only informal care, and 85,000 received a combination of formal and informal care. Housework was the most common type of home health service received. Aside from housework, the nature of the service varied with whether it was provided formally or informally. For those receiving only formal care, nursing ranked second and personal care ranked third. For seniors who received assistance only from informal sources, meal preparation or delivery and shopping ranked second. And for those receiving care from both formal and informal sources, personal care, meal preparation or delivery and shopping all tied for second.

### **Trends in home health services delivery and characteristics of home health service users**

The following section is based in part on information from household surveys. It should be noted that survey data have important limitations (34). That is because: no uniform definition of home health services exists; services differ in structure, access and content among provincial and regional jurisdictions; there are no data on informal care; data (including those on disease severity) are self-reported and their validity is unknown; and selection bias may limit interpretation of the data. Nevertheless, survey data are in many cases the only data available at a pan-Canadian level. Despite their limitations they can offer vital insights into what happens over time.

#### ***Eleven percent of people aged 65 and older are home health services clients***

An analysis of National Population Health Service data from 1994/95 (36) showed that two-thirds of home health services recipients were women, but the adjusted odds of receiving home health services were no greater for women than for men. In addition, there was a clear inverse relationship between household income and receiving home health services; after controlling for health status, smoking and the presence of numerous chronic condi-

tions, the two lowest income groups were more likely to be receiving home health services (odds ratio of 1.6).

In 2003, five percent of Canadians aged 18 or older – an estimated 1.2 million people – reported that they had received some form of either formal or informal home health services in the past 12 months (35), according to estimates derived from Canadian Community Health Survey (CCHS) data. Almost half of the total number of home health services recipients were over 65 years of age; they made up 15 percent of the household population aged 65 or older – eleven percent reported receiving formal (or a combination of formal and informal) home health services, the other 4 percent relied solely on informal services. The remaining recipients (648,000) were aged 18 to 64; they represented only three percent of the 18 to 64 population.

#### ***Home health services become more specialized and more people report unmet needs for these services over time***

Statistics Canada survey data show a trend over time towards more specialized home health services and to more people reporting unmet needs for home health services (37). The proportion of home health service users receiving nursing or personal care was up substantially in 2003. That year, more than half of home health service users received nursing care, compared with 39 percent in 1994/95. By contrast, the proportion receiving help with housework dropped from half to a third.

Despite government-subsidized home health services reaching greater numbers of people in 2003 (37), a smaller portion of individuals reporting needs for care received publicly-funded services. In 1994/95, an estimated 254,000 people needed help with some aspect of their personal activities (eating, bathing or dressing) but less than half (46 percent) received government-subsidized care. By 2003, the number of people needing help with such tasks grew to 434,000, yet just over a third (35 percent) reported receiving public services. Similarly, in 1994/95, almost 40 percent of people who needed help

moving around their homes received government-subsidized home health services. By 2003, that number had fallen to less than a quarter (24 percent).

Trends with housework parallel this situation. The National Population Health Survey found that from 1994 to 1999 more home health service users reported unmet needs for housework assistance, while nursing care remained relatively stable (38). In 2003, most seniors who reported needing help with household chores or with getting to appointments and/or grocery shopping received no home health services. Likewise, 42 percent who needed help moving about in their homes (a total of 53,000 individuals) did not receive either formal or informal home health support. In fact, even among those seniors who received home health services some reported that they still had unmet needs (35).

#### *User characteristics differ by type of service*

Who uses home health services? Understandably, users differ according to their service needs. A person receiving help with housework, for instance, would most likely be an older female who lives alone, has lower income, some activity restrictions, needs help with housework, was not hospitalized in the previous year, and has at least one chronic condition (36). In contrast, a person receiving nursing services would most likely be a male under 65 years of age who lives with others, has a higher income, is not restricted in his activities, is not in need of assistance with housework, was hospitalized in the previous year, and reports no chronic conditions. An Ontario study found short-term clients of home health services more likely to be younger, married, and employed men with higher income and higher levels of education, but fewer limits in Activities of Daily Living than long-term clients (39).

A study that analysed home health services data from BC and Saskatchewan for 1997/98 and 1998/99, divided people into short-term (<90 days) and long-term (>90 days) users (5). The highest proportion of clients in BC and Saskatchewan (28 percent and 32 percent respec-

tively) were in the 75-84 years of age group, and relatively few clients (17 percent in BC and 16 percent in Saskatchewan) were under 45 years of age. In BC, over half of long-term clients were 75 years of age or older compared to around a third in the short-term group. Also in BC, short-term clients received more home care services than home support services, while long-term clients used considerably more home support services than home care services. Long-term clients received, on average, one hour of home care service for every nine hours of home support. This implies that the relative proportions of short- and long-term clients will have a significant impact on the volume and type of resources required. The number of days in the home health system and the number of home support hours both tended to increase with age for both short-term and long-term clients.

#### *BC falls behind over time*

A 2007 report from the Canadian Institute for Health Information for the first time offered pan-Canadian data on publicly-funded home health services (10). These data suggest that over the period 1994/95 to 2003/04, BC went from being a relatively high spender on home health services among provinces, to being a relatively low spender. Inflation-adjusted spending per person increased in all provinces over this time, but the average annual increase in BC was the lowest. By 2003/04, the number of home health services per thousand population in BC was well below the national average, and only Newfoundland was lower among the provinces. While the data used for this report may be imperfect, the trends are consistent with those seen in provincial analyses (40).

#### **Urban and rural differences**

Other researchers examined National Population Health Survey data for 1996/97 and 1998/99 for what it reveals about rural and urban users and non-users of home care (37). Although the vast majority of rural and urban residents were satisfied with health care services received, 11 to 15 percent of urban residents who received home health services reported that needed care was not



received compared to three to six percent of rural users. Given that those who live in urban areas are more likely to receive home care than rural area dwellers, these findings may reflect the fact that the NPHS excluded populations on Indian Reserves and some remote areas in Quebec and Ontario, thus preventing the examination of those who are perhaps most at risk for not having access to home health services.

Rural home health service users were more likely to receive housework help and less likely to receive personal care assistance than those in urban areas. The authors noted that these findings are difficult to explain. Perhaps rural home care programs have lagged behind their urban counterparts in reducing or eliminating housework services due to the more pressing demand of servicing clients who are discharged home from acute inpatient care. The authors suggest that this lower proportion of personal care services may reflect the stoic and independent nature of rural residents and the greater availability of informal support networks in rural areas. Nonetheless, they concluded that the trend of decreasing personal care services offered to rural residents is a concern.

### **Home health services as a substitute for acute care**

#### *Use of home health services following acute care admissions increases over time*

Between 1994/95 and 2003, average hospital length of stay for users of home health services (as reported on survey data) fell sharply from 13 to nine days (37). In 2003, people who had been hospitalized during the previous 12 months were significantly more likely to receive government subsidized home health services (16 percent) than in 1994/95 (12 percent). Twenty eight percent of recipients had spent eight or more nights in hospital during the previous year. These proportions were notably lower among non-recipients. In Ontario, rates of home health services after hospitalization increased slightly from 12 percent to 13 percent between 1993 and 1995 (41). A study of Manitoba data also found an increase over the

1990/91-1998/99 time period in home health service use after hospitalization, from less than eight percent to more than nine percent, while over the same period the number of available hospital beds decreased by nearly 24 percent (40). However, post-acute home care was not the dominant reason for use of home health services, as less than 20 percent of Manitoba's 1998/99 home health services clients received this type of care.

In 1998/99, more than nine percent of Manitoba residents who were hospitalized or had an outpatient procedure were discharged to home health services. Nearly half of these had not been receiving home health services prior to hospitalization, and there was no real variation by region in the province in the likelihood of doing so (42). In contrast, an Ontario study (41) found large regional variations in post-acute home health service use in 1993 to 1995. In fact, there was a 3.5-fold regional variation in the rate of home health service use following in-patient care and a seven-fold variation following same-day surgery.

#### *Home health services appear cost-effective in many but not all cases*

Other research (43) has addressed the question of whether care episodes that included both hospital and home health service components cost less than episodes, for similar people, that involved a hospital stay only. This study was based on Alberta data for all hospital admissions in the 1996/97 and 1997/98 fiscal years and used Case Mix Group (CMG), an aggregation based on diagnostic codes, as the unit of observation. It was found that in most CMGs, cases with home health services were more costly than those without. The CMGs with the greatest volume of home health services cases were in the musculoskeletal major group (22.6 percent). These conditions reflect a loss of ability to perform activities of daily living such as mobility, dressing, and bathing. All of these functions can benefit from professional home health services. In about 50 CMGs there were at least 17 percent of all cases receiving some home health services.

The research team also looked at the relative severity of the cases in the hospital only, and hospital plus home health services patient groups, by analyzing the number of diagnoses per case as a measure of severity. They found that, on average, the clients who received hospital care plus home health services had higher severity ratings than clients who received hospital care only. The authors found that case severity was an important indicator of home health services use and concluded that home health service episodes are more costly because they involve a higher degree of severity.

The Canadian Home Care Association (CHCA) identified and documented “Outstanding Practices” related to hip and knee joint replacement care. These involved acute care home health services - pre and post-operatively - that significantly reduced the number of inpatient days and achieved comparable clinical outcomes. In London (Ontario) a multi-disciplinary approach that involves the surgeon, hospital and home health services team was put in place. The case manager identified options for patients such as whether early discharge was appropriate. Results of this approach point to decreasing hospital stays (44).

Home health services may not always be cost-effective. One review of studies compared home health services and no home health services following acute care (25). The study focused on the effect of post-acute home health services on the health of patients and caregivers (family and friends), and on public and private costs, for specific health conditions. Referring only to studies judged to be of high quality, the authors found that, compared with hospital care, home health services had no noticeable effect on patients’ (or caregivers’) health. The economic impact of home health services was found to vary by patients’ conditions. The authors concluded that home health services may be more appropriate for some conditions than for others.

### ***Home health services can substitute for acute care***

Regardless of cost, there is evidence that home health services can substitute for acute care without any negative effects on health outcomes. The 1998 hospital and home health service study, conducted by the Health Services Utilization and Research Commission in Saskatchewan (24), compared cost and health outcomes (patient and caregiver) for a sample of 780 patients who received post-acute home health services and those who did not, and for those who received “alternate level care” (that is, non-acute) days while in hospital and those who did not. They found that at two weeks post-discharge, patients had the same outcomes, whether or not they had received home health services or alternate level of care days.

A BC study on the cost of home health and residential care services (17) compared service utilization of home health and residential care clients for four cohorts, all of whom had new assessments in the 1987/88, 1990/91, 1993/94 and 1996/97 fiscal years. The study concluded that hospital costs were reduced as a proportion of overall health care costs for home health clients in the mid-1990s. This may have occurred because of an overall downward trend in use of acute inpatient services during this time. And while the average number of hospital days for home health service users declined in the mid-1990s, the average number of home support hours increased, suggesting that home health services may indeed be substituting for acute care.

In addition to helping people get out of hospital sooner, home health services may also prevent some from being admitted to hospital in the first place. One Ontario study looked at the role of Quick Response Teams (QRT) in averting hospital admissions (45). It found that QRTs helped patients who experienced an unexpected change in health status avoid hospitalization both when a higher level of care was ultimately required and when they were



able, eventually, to return to former routines. The results also suggested that the value of the service stemmed from benefits to patients rather than from overall cost savings.

### **Home health services to maintain health and keep people in their homes**

#### *In Manitoba, trends are for fewer admissions to residential care and greater use of home health before admission*

A Manitoba study examined how home health service access and use patterns were related to long-term care residential admissions and to mortality for the years 1995/96 to 1998/99 (40). Of all the clients who received home health services in 1998/99, eight percent were admitted to residential care. Researchers found a slow but significant increase over time in the proportion of Manitobans using home health services, a downward trend in wait times for residential placement and an increase in the average number of days of home health services in the year prior to being identified as being ready for residential placement. At the same time, the rate of residential care use declined among people aged 75 and over (from 143.5/1000 in 1985 to 133.4 in 1998), the number of beds decreased by nearly seven percent between 1990 and 1998/99, and the age of admission increased steadily from 81.3 in 1985 to 83.1 in 1999. All of these changes signal intent to help maintain people in their own homes as long as possible.

In Manitoba, in 1998/99, the vast majority of people admitted to residential long-term care were home health service clients; in the year prior to entry, they spent on average 272 days using home health services. The average number of hospital days in the year before entry to residential care was 102. These findings suggest that home health services are a “precursor” to residential care, that is, they are fulfilling a residential care substitution function. In this study, the intensity of services, categories of home health services or need for such services were not assessed. Also not represented were First Nation communities and private home health services (42).

#### *Home health services can be less expensive than facility care, especially when clients are stable*

Another BC study found that stable home health service clients incur considerably lower costs (17). For clients who remained at the same level and type of care for six months or more, the costs were about half or less of the overall costs for facility clients. The cost differential between home and facility care decreases for people who change their type and/or level of care. Other researchers analysed data on care outcomes and costs in Victoria and Winnipeg (27). They also found home health services to be less costly than facility care, even when adding the cost of informal care (both out-of-pocket expenses and time). These authors found client satisfaction was about the same for home-based and facility-based care. The cost differential, however, was highly dependent on the costing approach used for informal care services.

#### *Home health services may help maintain health*

One leading researcher compared the utilization of health care services and costs of people who had been cut from home support services with those who had not been cut, from one year prior to the 1995 cuts to three years after (30). His study found that a substantial proportion of those who had been cut returned to home health services at a higher level of care compared to those who had not been cut. In addition, he found that death rates were found to be higher for people who were cut from service. This finding is not consistent with research in Saskatchewan, which showed that users of preventive home health services were more likely to be admitted to long-term care and to die than non-users (46). That study, however, did not control for initial functional or health status of the individuals involved. It is therefore likely that the outcomes result from there being a frailer group of individuals using preventive home health services, rather than from the use itself.

## 3. Methods

### Background definitions: Home health services

Home health services in BC include nursing care, physiotherapy, occupational therapy, speech therapy, respiratory therapy, nutrition, counseling and social work and home support. Home support services, in turn, comprise two main categories: personal assistance and housekeeping. Personal assistance refers to personal care or help with activities of daily living such as mobilization, nutrition, lifts and transfers, bathing, grooming, and toileting, as well as delegated nursing tasks such as medication management. Housekeeping refers to the minimum set of household tasks required to maintain a safe and supportive environment for a client. It includes cleaning, laundry and meal preparation, and by exception, transportation, banking, or shopping. It does not include home maintenance. Personal assistance and housekeeping services can be performed by the same person.

### Source of the data

The data for this study were extracted from the BC Linked Health Database (BCLHD) (47). This database is developed and maintained by the Centre for Health Services and Policy Research at UBC, in collaboration with the BC Ministry of Health Services. Data from the BCLHD are available to researchers who meet access criteria according to a policy that complies with BC's Freedom of Information and Protection of Privacy Act (48;49). Each individual in the BCLHD is assigned a unique, anonymous identifier making it possible to link and track information about one individual across data files and over time. Ethics approval was obtained through the UBC Behavioural Research Ethics Board.

We accessed the following data files from the BCLHD for each of the fiscal years 1994/95 to 2005/06: 1) Registry

file, 2) Continuing Care, 3) Hospital Separations, and 4) Medical Services Plan (MSP). The registry file is the central demographics file for the BCLHD and is a registry of all residents who meet eligibility criteria for BC health care insurance and in some cases where they receive services, even in the absence of a valid registration.\* This file includes demographic information for each individual, regardless of whether they use health care services. This file provided information on year and month of birth, sex, region of residence and socioeconomic decile of residence.

The Continuing Care files provide data on the use of publicly-funded home health services and residential care throughout the province. Data on use of home health services are derived from three data files, the Long-Term Care Advice and Direct Care Advice files, and the Home Support claims files, each of which includes type of service (home nursing, community rehabilitation therapy, adult day programs, and home support), dates of service and amounts of service, including start dates and end dates. Notably absent from these files is information on clinical case management, so this service is not included in these analyses. We also did not look at use of palliative or convalescent care.

The Hospital Separations file contains data on all acute care admissions and day surgeries at hospitals in BC. Data contained in the file include dates of hospital admission and discharge, the principal (ICD9) diagnosis identifying the diagnosis most responsible for admission, and other primary and secondary diagnoses identified as contributing to the length of hospital stay. The Hospital Separations file also includes data on elective surgeries, alternate level care days (ALC days), and deaths occurring in-hospital.

\* Eligibility criteria are set in part by the Canada Health Act, e.g. coverage begins in the third month of residency in the province for Canadian citizens and landed immigrants. Presence in the registry also depends on individuals signing up for the Medical Services Plan, the B.C. version of health insurance. Most people do register, but comparisons of registry and population data suggest that young males are among the population groups where there is under-counting in the registry.



The Medical Services Plan file includes payment information for all fee-for-service care provided by physicians to BC residents. This file includes the date of each visit, total amount paid, a unique physician identification number, the physician specialty code, and the diagnostic (ICD9) code most responsible for the visit. For purposes of analysis, we created four broad groupings of physicians as follows: general practitioners, medical specialists (dermatologists, neurologists, psychiatrists, neuropsychiatrists, pediatricians, pediatric cardiologists, and specialists in internal medicine, physical medicine or emergency medicine), surgical specialists (obstetrician/gynecologists, ophthalmologists, otolaryngologists, general surgeons, neurosurgeons, orthopedic surgeons, plastic surgeons, thoracic and cardiovascular surgeons, urologists and anesthesiologists), and diagnostic specialists (radiologists, pathologists, medical microbiologists and nuclear medicine specialists). This categorization is consistent with previous analyses of the BC Linked Health Database (see, for example (50)).

It is worth noting that the MSP data do not include information on the use of services provided by physicians paid by non-fee-for-service methods. Physicians reimbursed through alternative payment arrangements (e.g., physicians paid by salary or for a specified block of time).<sup>\*</sup> These alternative payment arrangements have traditionally represented less than 10 percent of total payments to physicians, but their proportion has been rising in recent years (51). Furthermore, the relative importance of alternative payments varies by region (greater alternative payments schemes in rural and remote areas of the province, which also tend to be poorer) as does specialty of physician. This information gap means our analyses will under-represent use of services by (some) lower income individuals, as well some tertiary care services (such as cancer care) that cut across all income strata.

\* For a detailed description of non-fee-for-service reimbursement for physicians' services in BC, see Appendix II of Developing an information system to identify and describe physicians in clinical practice in British Columbia (1996/97 – 2004/05) by Watson DE, Peterson S, Young E, Bogdanovic B, 2006.

\*\* These variables are available through the BC Linked Health Database.

## Study population and home health service user definitions

This study included all British Columbians aged 65 and older who were part of the registry file at the end of the fiscal year, for the years 1995/1996 through 2004/2005. The registry file thus constituted both the cohort of analysis and the denominator file for determining rates and proportions.

## Variables

The variables used for this study can be divided roughly into those that might explain differences in use of health care services, and those that provide measures of that use. All variables used in analysis are described in Table 1. The demographic variables, age, sex, region of residence and neighbourhood-based income deciles were derived from the BC Linked Health Database registry file. The measures of use of publicly-funded health services including home health services as well as acute care hospitalization, surgical day care use, and fee-for-service physician encounters, were derived from the content files of the BC Linked Health Database. The health status variables were derived using diagnostic coding in the hospital and physician payment files as described below.

## Health status: The Adjusted Clinical Groups case-mix system

The Adjusted Clinical Groups (ACG) case-mix system is an individual-level measure of need for health care services developed at Johns Hopkins University.\*\* As described by the developers of this system:

*The Johns Hopkins ACG Case-Mix System is a statistically valid, diagnosis-based, risk adjustment methodology which allows health care providers, insurers and HMOs to describe or predict a population's past or future health care utilization and costs. ACGs are also widely used by researchers to compare various patient populations' prior*

Table 1 » Analysis variable names and definitions

| Name                                     | Definition  |
|--|---|
| <b>Demographic variables</b>             |   |
| Age                                      | Six age groups, with age calculated at the end of each fiscal year: 65-69, 70-74, 75-79, 80-84, 85-89 and 90+   |
| Sex                                      |   |
| Region of residence                      | Each individual assigned to one of 16 Health Service Delivery Areas, which can be aggregated to one of five geography-based Health Authorities  |
| Socioeconomic decile of residence        | Assigned by the BCLHD prior to release of data to researchers. This variable uses postal code of residence to identify location in one of 7,000+ dissemination areas used by Statistics Canada. Each dissemination area is assigned an average household income (adjusted for household size), areas are ranked by income within groups of similar population size, and deciles are assigned so that they each represent approximately 10% of the total population (52).  |
| <b>Use of home health services</b>       |   |
| Home nursing care                        | Based on number of visits used during a defined service period (for adult day program, this is the number of days of service use; for home support, this is the number of hours). Service periods are defined separately for each type of provider. No dates of service use are associated with the period. So, for example, a record may indicate six home nursing care visits over a two-month period, and there would be no way to know when those visits occurred or how they were distributed across time. Measures of use included both a likelihood of at least one visit and an average number of visits per client per year ("intensity"). |
| Home physiotherapy                       |   |
| Home occupational therapy                |   |
| Adult day program                        |   |
| Home support                             |   |
| <b>Use of other health care services</b> |   |
| Physicians                               | Analysed in four physician groups as described above (general practitioners, medical specialists, surgical specialists and laboratory/diagnostic specialists). Measures of use included both likelihood and intensity, as above, where intensity is defined as the number of visits, and a visit is a unique combination of individual, provider and date.  |
| Acute care hospitalizations              | Included admissions for acute inpatient care. Total days were separated in regular and alternate level of care days. Measures of use included both likelihood and intensity, where intensity is the total number of days in hospital.   |
| Surgical day care admissions             | Same-day surgeries and other procedures that require specialized facilities such as an operating room but not an overnight stay. Measures of use were limited to likelihood of use.   |
| <b>Health status</b>                     |   |
| Health status                            | Measured on a fiscal-year basis for all individuals in the study. Details are provided in the text.   |

*health resource use while taking into account the morbidity or "illness burden" of each population. (53)*

This system accumulates the diagnoses that individuals receive from encounters with physicians and hospitals over a defined time period. In this case, and in most others, the time period is a year. Each diagnosis is assigned to one of 238 Expanded Diagnosis Clusters (EDCs), which are aggregations of diagnoses based on sections within the International Classification of Diseases. Each diag-

nosis is also assigned to one of 32 Aggregated Diagnosis Groups (ADGs) based on several criteria including clinical similarity and expected use of health care services such as follow-up visits or the likelihood of referral to a specialist. For example, a diagnosis of "dermatitis" is considered a "time limited: minor" condition. Eight of the ADGs are considered "major", meaning they could be expected to have a significant impact on need for health care services. These eight major ADGs are one focus of our analyses, and include: Time Limited – Major; Time



Limited – Major, Primary Infections; Likely to Recur – Progressive; Chronic Medical – Unstable; Chronic Specialty – Unstable, Orthopedic; Injuries/Adverse Effects – Major; Psychosocial - Recurrent or Persistent, Unstable; Malignancy.

This case-mix system has been validated for use in BC using administrative data from the BC Linked Health Database (54). The ACG system was shown to have high explanatory power for health care services use comparing ACG assignment with same-year use of health care services in BC and reasonable predictive power for next-year use. In other words, the ACG categories were predictive of health care services utilization. Thinking about this in terms of the need for health care services, the ACG assignment for an individual will predict his or her use of health care services; average need scores within an ACG indicate average need for health care services within that group.

Because the ACG is based on an accumulation of diagnosis codes found in physician payment and hospital separations data across an entire year, analyses that were based on ACGs were limited to individuals registered for at least 275 days (nine full months) during the year, leaving in people who died during the year. Registration for less than a full year reflects less opportunity (time) to use health care services in BC during the course of the year. This means there is less time to accumulate the diagnosis codes that determine classification into the Aggregated Diagnosis Groups and ultimately to the Adjusted Clinical Groups. The restriction to nine months/275 days is consistent with prior analyses of BC data (54;55). It should be emphasized that this exclusion is limited to analyses that include this case-mix system.

Dates of death from the BC Vital Statistics were not available for this study. Therefore, deaths in a fiscal year were determined from two separate files: 1) hospital separations files (the exit code=X (1995/96-2000/01) and the separation dispensation code='07' (2001/02-2005/06))

and/or 2) registry files (the reason code='C' and cancellation date (year)). If a death occurred in either of these data files, the person was coded as having died in that fiscal year. We resolved discrepancies between the two databases. There were 77 cases where the same person was listed as having died in the registry file and in the hospital separation file, but in different years. In those cases, the latest of the two years was used as the year of death.

## Constructing groups for analysis

Users of home health services were classified into one of six distinct user categories for each year of the analysis, as follows:

1. Long-term users with facility days are individuals who received 90 or more continuous days of home health services plus one or more days in a residential facility;
2. Long-term users without facility days are individuals who received 90 or more continuous days of home health services and no residential care days;
3. Short-term users with facility days are individuals who received fewer than 90 continuous days of home health services and one or more days in a residential facility;
4. Short-term users without facility days are individuals who received fewer than 90 continuous days of home health services and no residential care days;
5. Facility-only users are individuals who spent one or more nights in residential care and received no home health services; and
6. Non-users are individuals who received no home health services and no residential care.

When not otherwise explicitly stated in this report, long-term users refers to groups 1 and 2 and short-term users refer to groups 3 and 4.

In addition to these groups, we added a “former long-term user” group for one later section of the analyses. This group includes individuals who were long-term

users of home health services in a previous fiscal year, but in the year in question are no longer long-term users, not short-term users, not in facility and are not deceased. In other words, this group of former long-term users is drawn exclusively from the current “non-user” group (though this group may, in fact, be receiving services not included in these analyses, such as case management).

These user categories are mutually exclusive in a fiscal year, but making them so required a number of analytic decisions. For example, if a person was both a long-term user and a short-term user in the same fiscal year, that person was classified as long-term for that year; i.e. long-term trumps short-term use. More detail on preparation of the analytic file is provided in Appendix II.

## Analysis

Use of home health services was examined for all British Columbians aged 65 and older over fiscal years 1995/1996 through 2004/2005. Population counts were based on registry files at the end of each fiscal year.

The analyses describe the users of home health services by age, sex, neighbourhood socioeconomic status, region of residence, the types of home health services used by long-term users and use of other health care services. All analyses are descriptive.

Rates over time that are not age and sex-specific are age- and sex-standardized. Age and sex standardized rates were calculated using the direct standardization method. This method removes the effects of different population structures that may influence the rates of use of health services either across different regions or across time. Direct standardization allows, for example, the comparison of one region to another as if these had the same population structure. For this study all data for each year were standardized to the total study population in each fiscal year.

Analyses were conducted using SAS. Direct standardization was done using Stata v. 9.0.



## 4. Who are the Long-Term Users of Home Health Services, and What Do They Use?

### CHAPTER SUMMARY

#### Who uses long-term home health services?

Between 1995/96 and 2004/05, an average of 7.5 percent of people aged 65 and older used long-term home health services. On average, the use of long-term home health services:

- Increased with increasing age and decreasing socio-economic status.
- Was higher among women.
- Varied by a factor of two among Health Service Delivery Areas.

Over time we found a:

- Decrease in the overall rate of utilization – 10 percent of adults over 65 were using long-term home health services in 1995/96 while less than six percent were using these services in 2004/05.
- Decrease in difference in long-term use by age and neighbourhood income.
- Decrease in the variation in use of home health services among Health Service Delivery Areas.

#### Who uses short-term home health services?\*

Between 1995/96 and 2004/05, an average of 3.4 percent of people age 65 and older in BC used short-term home health services. On average, the use of short-term home health services increased with increasing age except for those over 90. Over time we found a slight increase in the use of short-term home health services.

\* It is worth repeating that some post-acute use of services is not reported by Health Authorities to the Ministry of Health Services. The data for this type of service are incomplete, and the results should be interpreted with that in mind.

## Overall use by age, sex, neighbourhood income and region of residence

Figure 2» Users of home health services, by age group and by sex (all years combined)

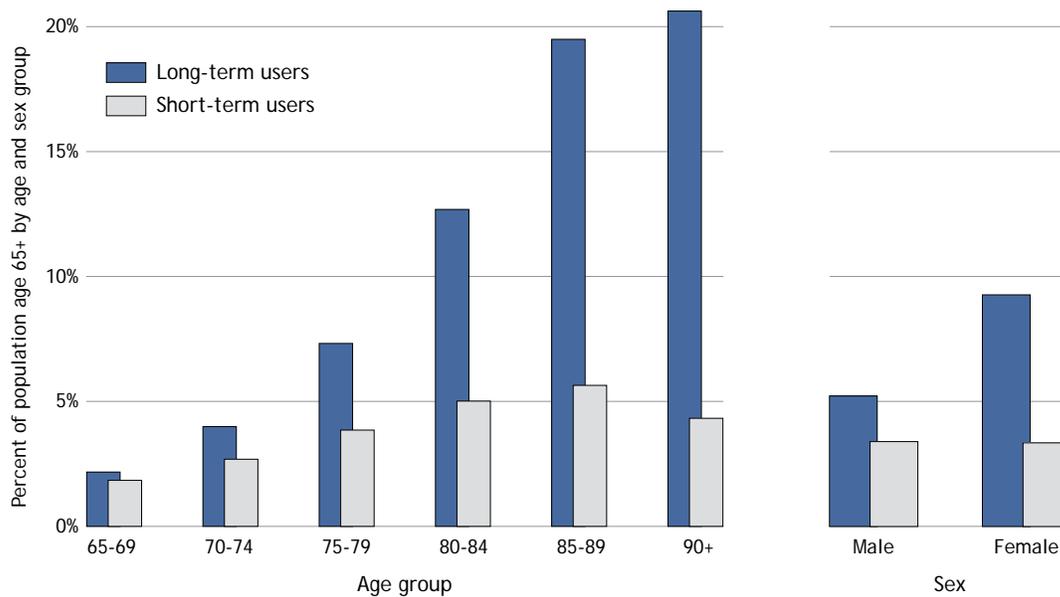


Figure 3» Users of home health services by neighbourhood income decile (all years combined, age and sex standardized)

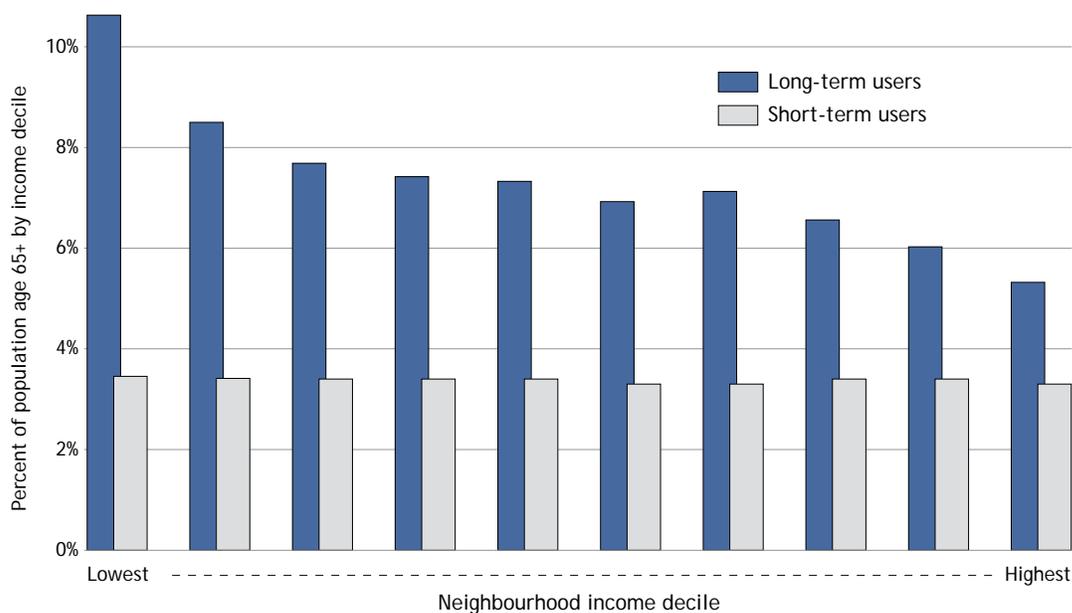




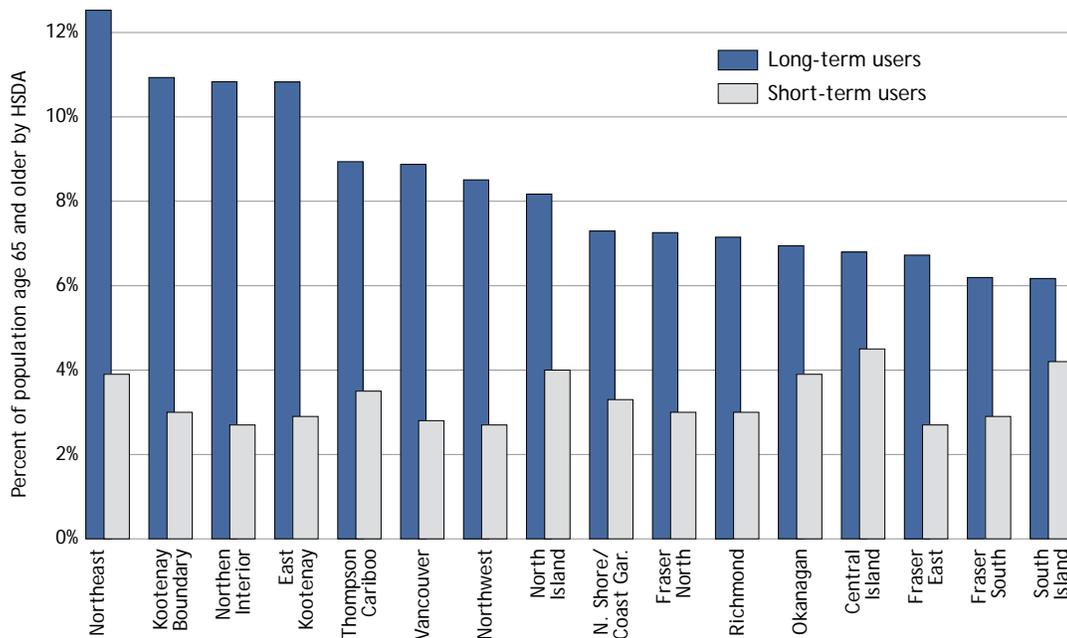
Figure 2 shows both short- and long-term users of home health services by age group and sex. These graphs combine all years of data (1995/96 through 2004/05) and thus represent averages over this time period. As seniors aged, their chances of being long-term users of home health services increased significantly, while their likelihood of being short-term users differed little. Females were more likely to be long-term users than males, while the sexes were equally represented among short-term users.

Figure 3 shows the age- and sex-standardized percentages of short- and long-term users of home health services by socioeconomic decile. As neighbourhood income rises, the chances of being a long-term user falls; in fact, people in the lowest neighbourhood income decile were twice as likely to use long-term home health services as their counterparts in the highest neighbourhood income decile

(10.2 percent vs. 5.2 percent). The likelihood of being a short-term user, on the other hand, did not differ by neighbourhood income.

When standardized for age and sex, seniors were up to twice as likely to use long-term home health services depending on where in BC they lived (by Health Service Delivery Area (HSDA)) (Figure 4). Rates range from 12.5 percent in the Northeast HSDA to 6.2 percent in the South Vancouver Island HSDA (again, these rates represent averages for all study years combined).\* The figure sorts the HSDAs from highest to lowest rates of long-term users. The pattern is not the same for short-term users. In other words, a greater likelihood of being a long-term user does not mean a lesser likelihood of being a short-term user, and vice versa.

**Figure 4» Users of home health services by Health Service Delivery Area (all years combined, age and sex standardized)**



\* Data for the Interior Health Authority for 2005/06 were not complete at the time of analysis. Consequently, in 2004/05, Interior Health has an (unquantifiable) mis-classification of long-term users as short-term users. The Interior Health Authority includes the following health service delivery areas: Kootenay Boundary, East Kootenay, Thompson Cariboo and Okanagan.

## Trends over time

Figure 5» Users of home health services over time (age and sex standardized)

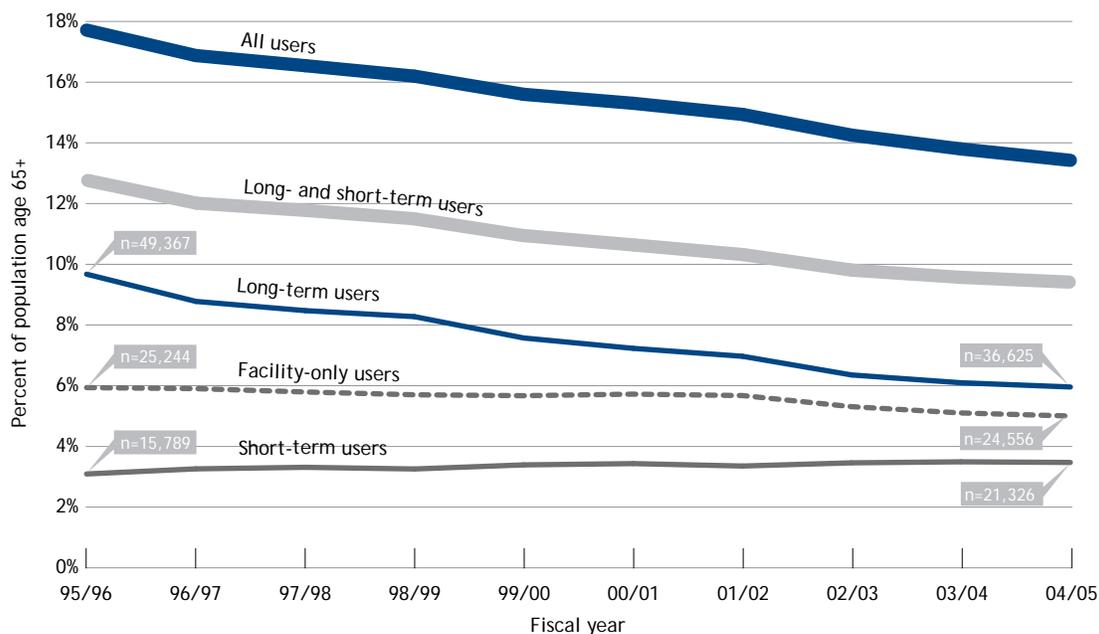


Figure 6» Long-term users of home health services by age group over time

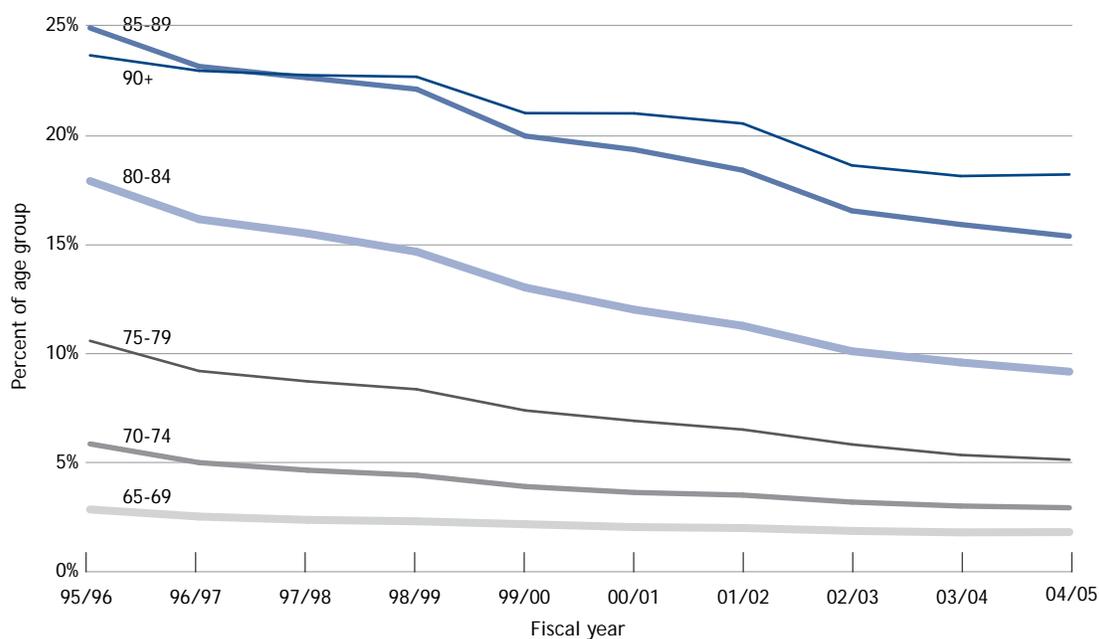
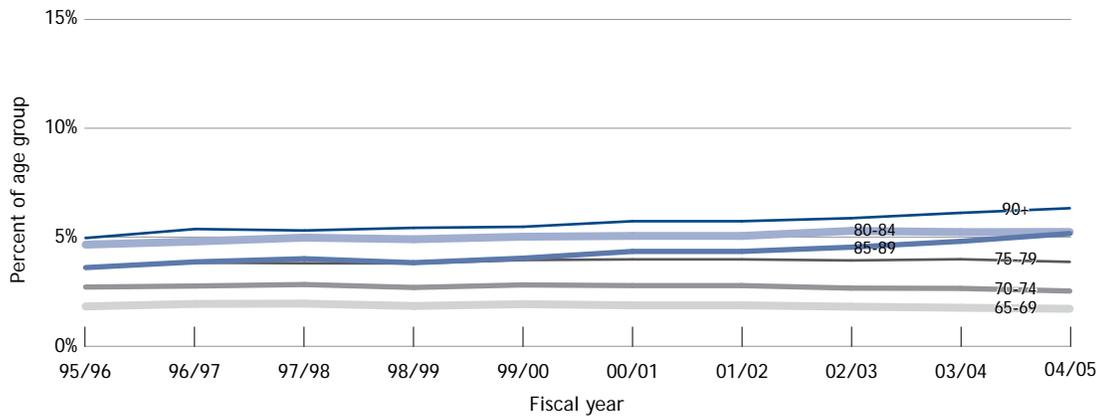




Figure 7» Short-term users of home health services by age group over time



The proportion of seniors who use either long- or short-term home health services or who use facilities such as residential care has decreased, from about 18 percent in 1995/96 to a little more than 13 percent in 2004/05 (Figure 5). The likelihood of using home health services decreased from 13 percent in 1995/96 to nine percent in 2004/05. Although the likelihood of being a short-term user increased slightly, and the likelihood of being in a facility decreased slightly, the main driver of this trend is the declining probability of being a long-term user. In 1994/95, nearly one in 10 seniors (more than 49,000 individuals) qualified as a long-term user of home health services. By 2004/05, however, this portion had shrunk to one in 17 seniors (a little under 37,000 individuals).

Figure 6 shows the likelihood of being a long-term user of home health services by age group over time. While rates of use declined for everyone, the reduction was relatively larger in the middle age groups. Rates fell by about half among the 70-84 year old age groups, and by about a quarter among the 90+ age group, which is the group most likely to be long-term users. In contrast, the likelihood of being a short-term user was either stable or increased marginally (Figure 7).

By the end of the study period, the age mix of long-term users of home health services shifted from being dominated by 80 to 84 year olds (one in four users in 1994/95) to 85 to 89 year olds (one in four users in 2004/05) (Figure 8).

Figure 8» Number of long-term users of home health services by age group over time

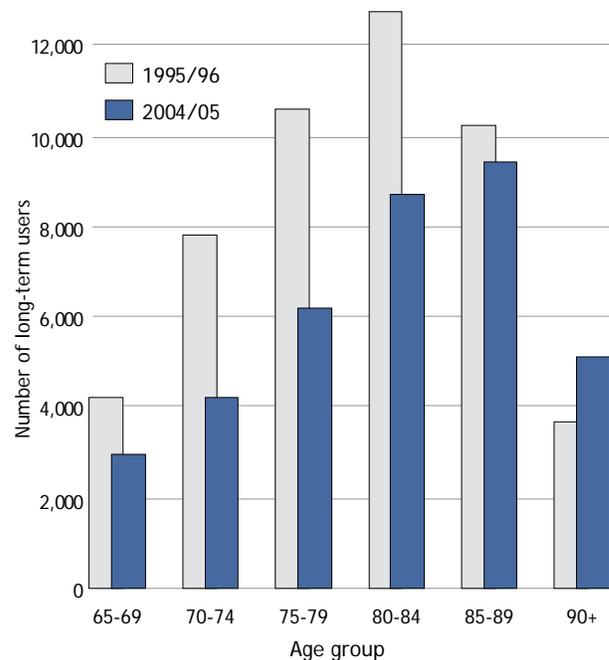


Figure 9» Users of home health services by sex over time

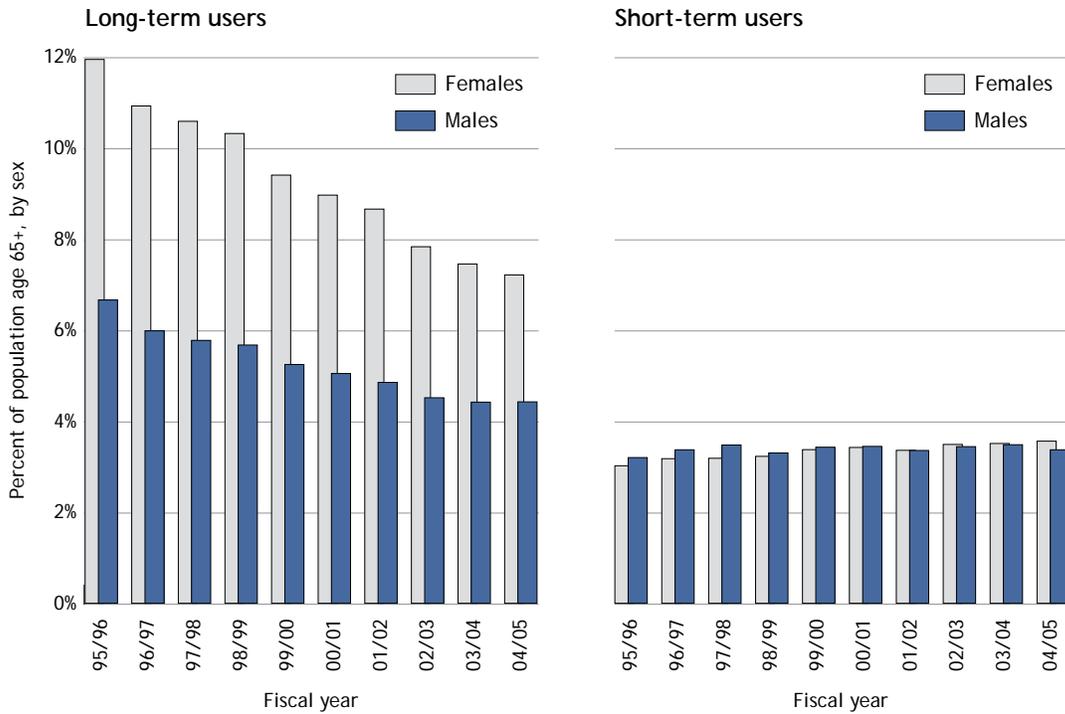
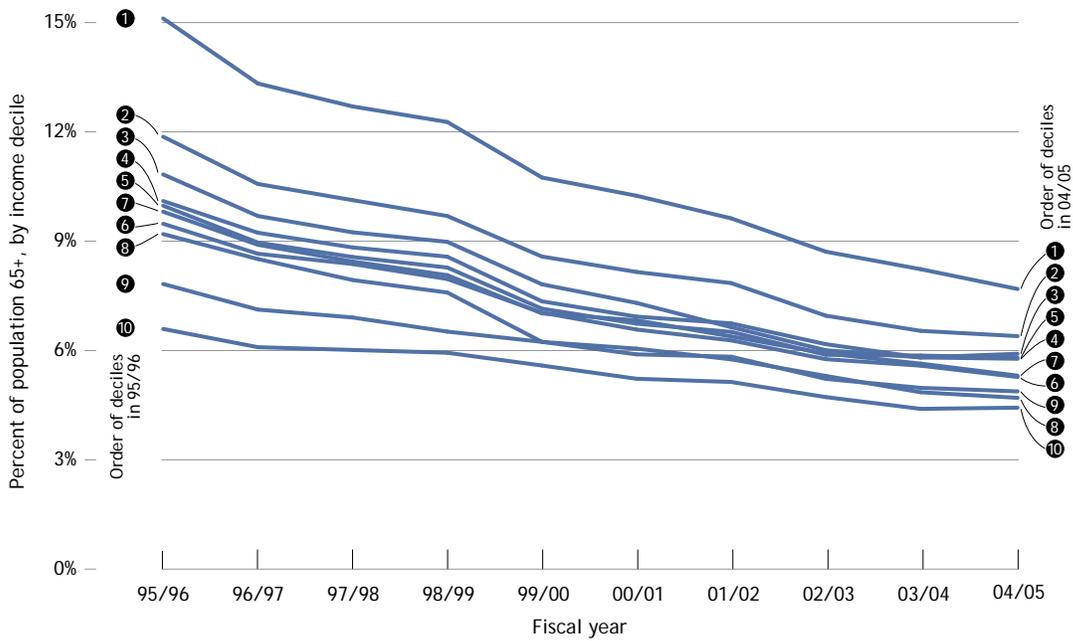
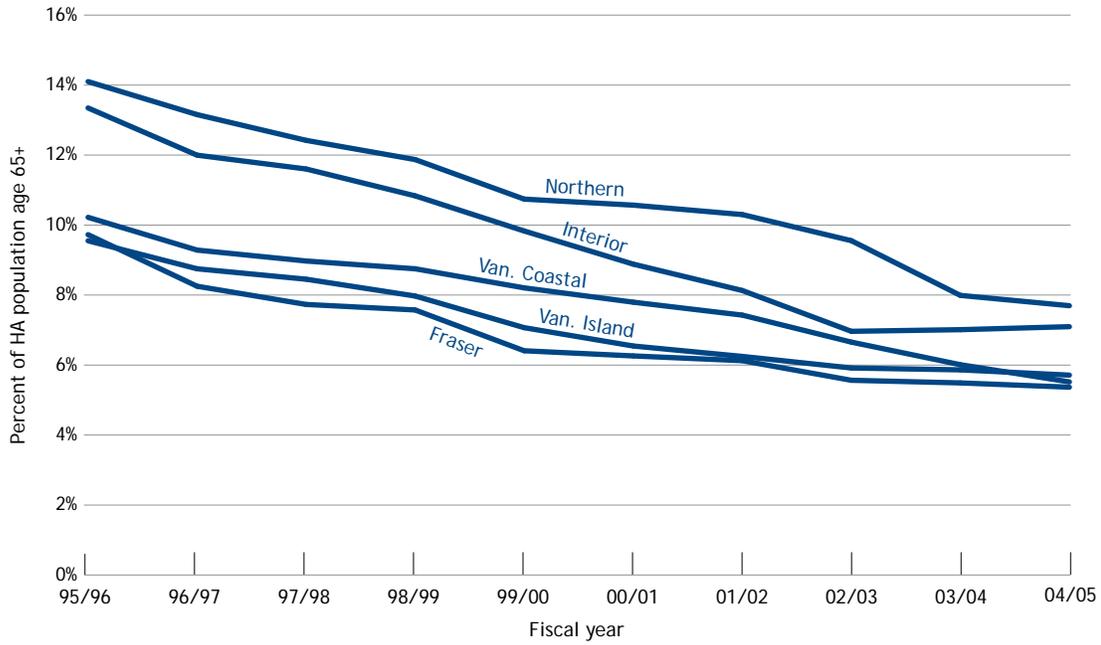


Figure 10» Long-term users of home health services by neighbourhood income decile over time (age and sex standardized)

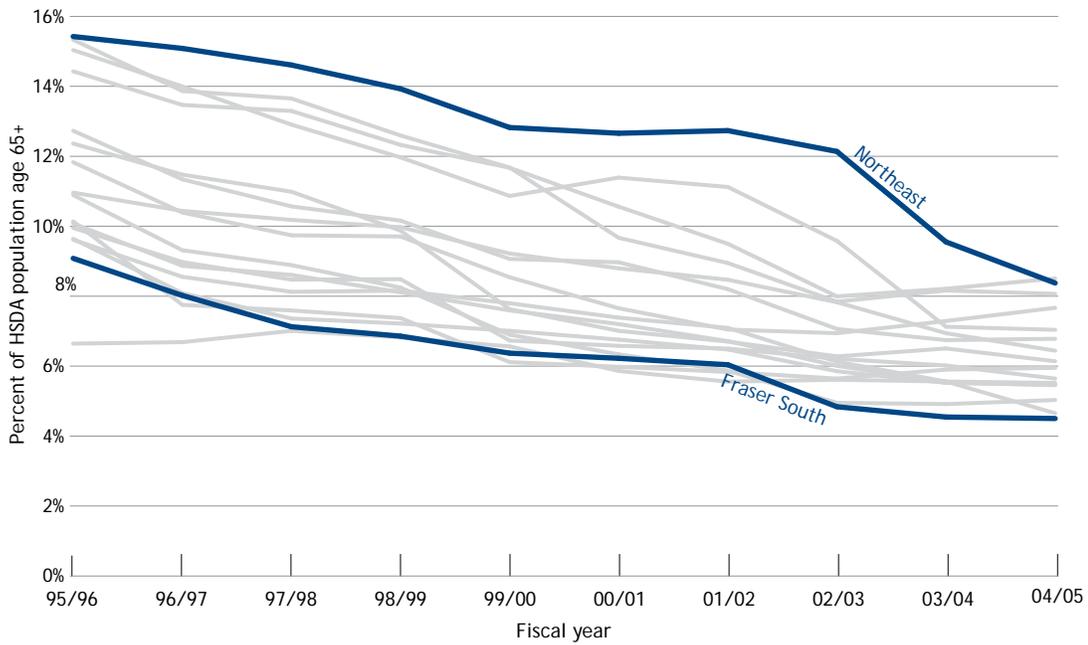




**Figure 11» Long-term users of home health services by Health Authority over time (age and sex standardized)**



**Figure 12» Long-term users of home health services by Health Service Delivery Area over time (age and sex standardized)**



Women are far more likely to be long-term users of home health services than are men, yet the likelihood for both sexes declined over time (Figure 9). In 1994/95, women's rate of use was 12 percent while men's was seven percent. Ten years later, these rates had fallen to seven percent for women and four percent for men. In contrast, there was no difference in the likelihood of being a short-term user of home health services, and overall that possibility increased (very) slightly for both sexes.

In 1995/96, seniors who lived in the lowest income neighbourhood (decile 1) were more than twice as likely to use long-term home health services as seniors in the highest (decile 10) (Figure 10). By 2004/05 that likelihood was reduced for all income groups, and the range had narrowed slightly, from eight percent in the lowest decile to four percent in the highest income decile. This implies that the relative decline in the likelihood of receiving long-term home health services was greater in lower than in higher income groups. Adjusting for health status (using Adjusted Clinical Groups) in addition to age and sex had no effect on these patterns (data not shown).

In 1995/96, Northern Health and Interior Health had the highest rates of long-term users, at 14 percent and 13 percent of the seniors population respectively, while Vancouver Coastal, Fraser and Vancouver Island Health Authorities had long-term use rates of about 10 percent. Ten years later, in 2004/05, there was less variation with the rates among Health Authorities ranging from a high of 8 percent in Northern Health to about 5 percent in Fraser Health (Figure 11).

However, variations at both the start and end of the study were greater when we looked at Health Service Delivery Areas (Figure 12). In 1995/96, rates of use among Health Service Delivery Areas varied from 15 percent (North-east) to 7 percent (South Vancouver Island). By 2004/05, overall rates of use had declined significantly and the range among Health Service Delivery Areas had narrowed, from a high of about 9 percent to a low of about 5 percent. This means that even after the implementation of policy changes that might have been expected to create more consistency across the province, there remained nearly two-fold (age- and sex-standardized) regional variations in the likelihood of being a long-term user.



## 5. What Home Health Services Do Long-Term Clients Use and How Has This Changed Over Time?

### CHAPTER SUMMARY

#### Which long-term clients of home health services used what services in 2004/05?

##### *Home nursing care*

- One in three long-term clients had at least one home care nursing visit.
- Home care nurses made an average of 34 visits per client.
- The likelihood of having a home nursing visit decreased with increasing age.
- Men were more likely than women to have a home nursing visit.
- The average amount of home care nursing varied little by age or sex.
- The likelihood of having a visit from a home care nurse increased with increasing neighbourhood income; the amount of home care nursing was not related to income.
- Fewer home care nursing visits are being spread over a greater proportion of long-term clients of home health services.

##### *Occupational therapy and physiotherapy*

- One in five long-term clients has at least one occupational therapy visit, and the same proportion had at least one physiotherapy visit.
- Clients receiving occupational therapy had an average of five visits.
- Clients receiving physiotherapy had an average of six visits.
- The likelihood of receiving occupational therapy decreased slightly with increasing age. The likelihood of receiving physiotherapy increased slightly with age. The likelihood of receiving occupational therapy was higher for men, while the likelihood of receiving physiotherapy was the same for both sexes.
- The average amount of occupational therapy decreased with age, and women received fewer visits than men. The average amount of physiotherapy decreased slightly with increasing age and was slightly greater for women.
- The likelihood of receiving occupational therapy increased with income, and the likelihood of receiving physiotherapy increased slightly with income. There was no income related difference in the amounts of occupational therapy, or physiotherapy.
- Slightly fewer occupational therapy and the same number of physiotherapy visits are being spread over a greater proportion of long-term clients of home health services.

##### *Adult Day Program*

- One in eight long-term clients used Adult Day Programs.
- The average number of Adult Day Program visits per client was 9.7 visits.
- The likelihood of using Adult Day Programs increased with age, and was somewhat higher for men than for women.
- The average amount of Adult Day Program use appeared to decrease with increasing age, and men received on average one more visit than women.
- The likelihood of using Adult Day Programs increased with increasing income, but amount of use was not income related.
- The likelihood of using Adult Day Programs increased over time, but the average amount of use remained stable.

**Home support**

- Sixty-one percent of long-term clients of home health services had at least one home support visit.
- Home support clients received an average of 17 hours per month of home support.
- The likelihood of receiving home support increased with age, and was higher for women than for men.
- The average amount of home support was greatest in the youngest age group and lowest in the 74 to 84 years group. Both sexes received similar amounts of home support.
- The likelihood of receiving home support decreased with increasing income, but the average amount increased with increasing income (decile 1 received 171 hours of home support, while decile 10 received 238 hours).
- A smaller proportion of seniors are receiving a greater number of home support hours.

**Overall**

- The home health services system was reaching fewer seniors overall in 2004/05 compared to 1995/96.
- The (smaller) long-term user population was more likely to receive home care services, while the intensity of service use remained relatively stable.
- At the same time, this group was less likely to receive home support.
- This suggests, overall, an increasing focus of these types of care on clinical needs, rather than other services to seniors who are long-term users of home health services.

The introduction and methods chapters described a wide variety of publicly-funded home health services in BC. In this chapter we provide more detail about the type and amount of these different services used by long-term users of home health services, and how those patterns of use have changed over time. Comparisons are focused on three years (1995/96, 1999/2000 and 2004/05) representing the beginning, middle and end of the study. It should be emphasized that the changes outlined in this chapter occur within the context of a smaller (proportionate) group of people who are long-term users over time.

**Home nursing care**

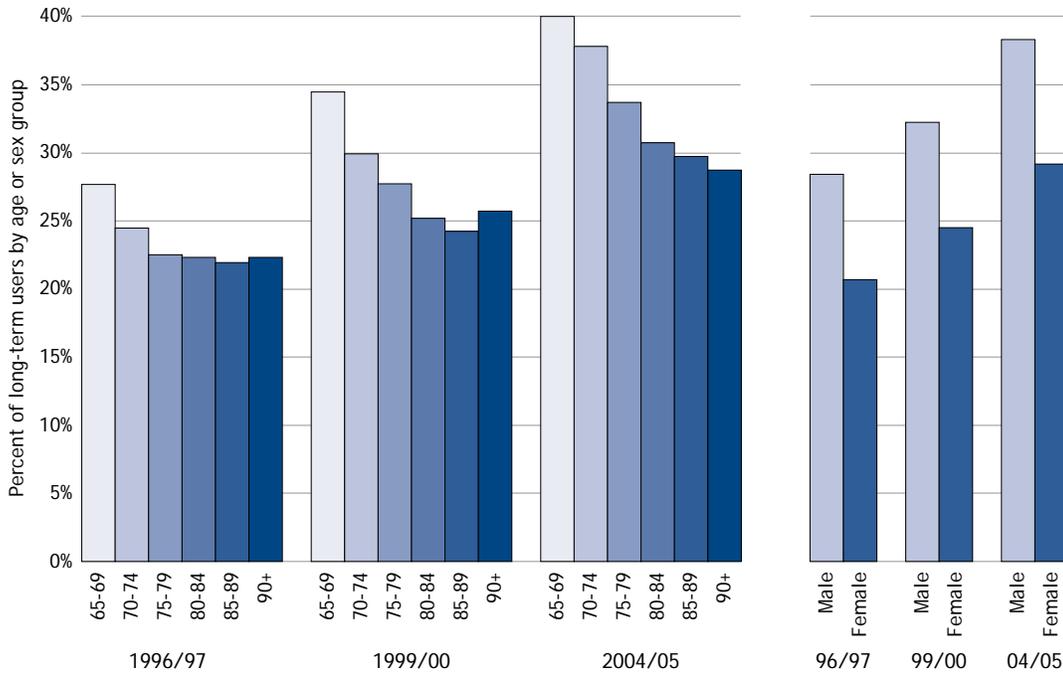
The charts below provide information on both the likelihood of long-term home health service users having at least one home nursing care visit by age group, sex and year (Figure 13) and the average amount or intensity of

service given at least one visit (Figure 14). The likelihood of using home nursing care increased during the study for all age groups and both sexes. The relative increase was greater among lower age groups, so that by 2004/05 there was less likelihood of having a home nursing visit with increasing age. Males were more likely than females to have a home nursing visit at all points in time. Overall, about one in four long-term users had at least one home nursing care visit in 1995/96. This grew to one in three by 2004/05.

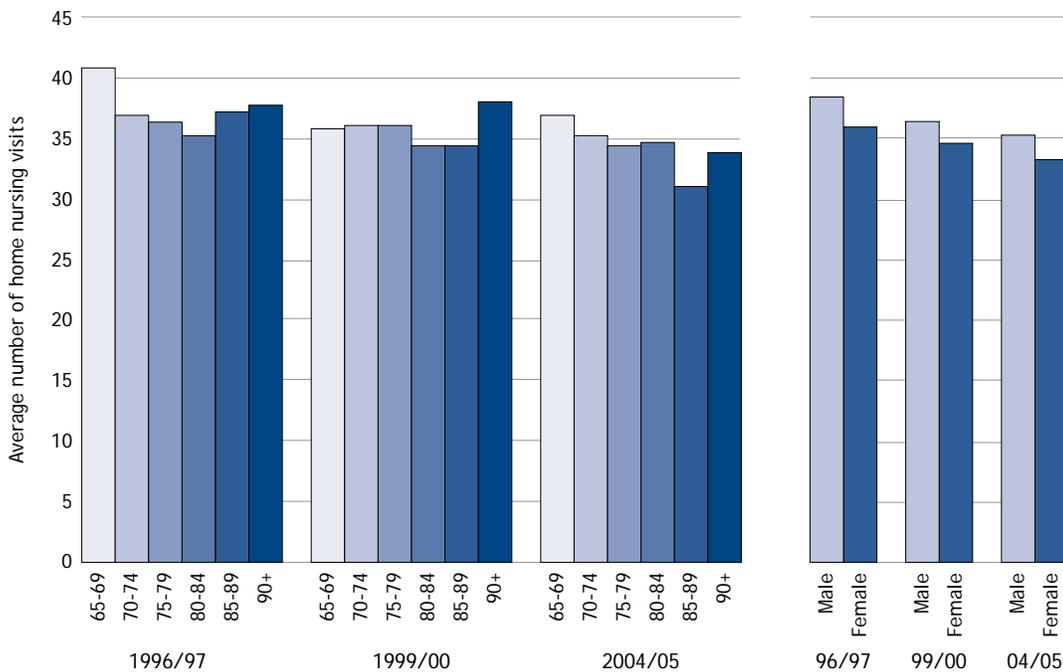
Given that there was at least one home nursing care visit, the average intensity of use does not vary a great deal by either age group or sex. There appears to be a slight reduction in intensity of use over time, from an average of about 37 visits to 34 visits per client per year.



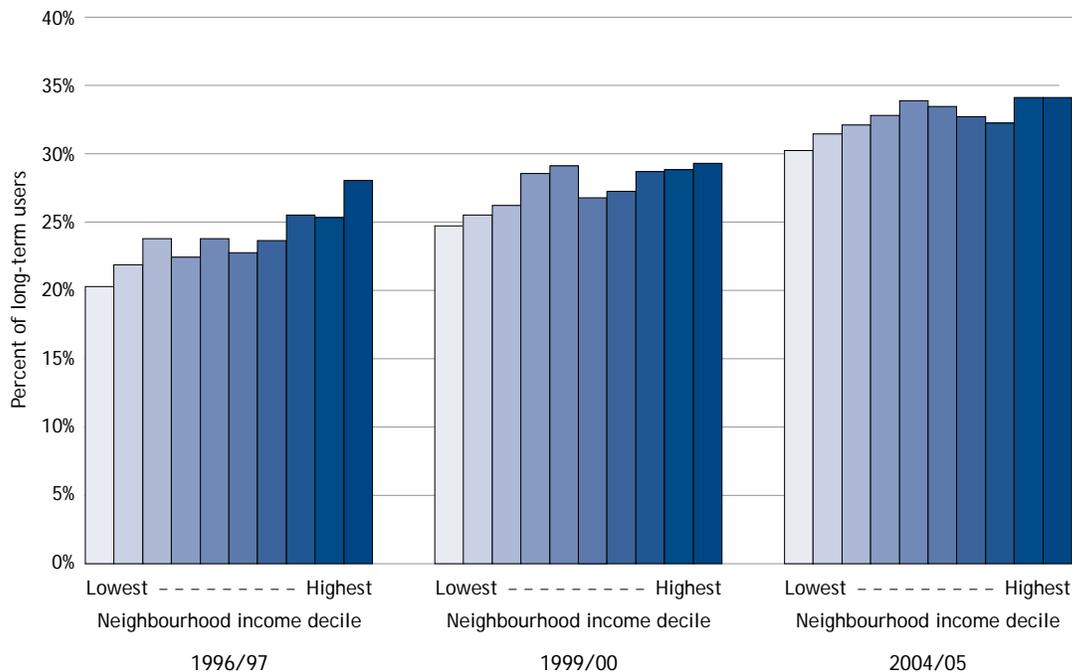
**Figure 13» Percentage of long-term users of home health services who received home care nursing, by age group and year (age and sex standardized) and sex**



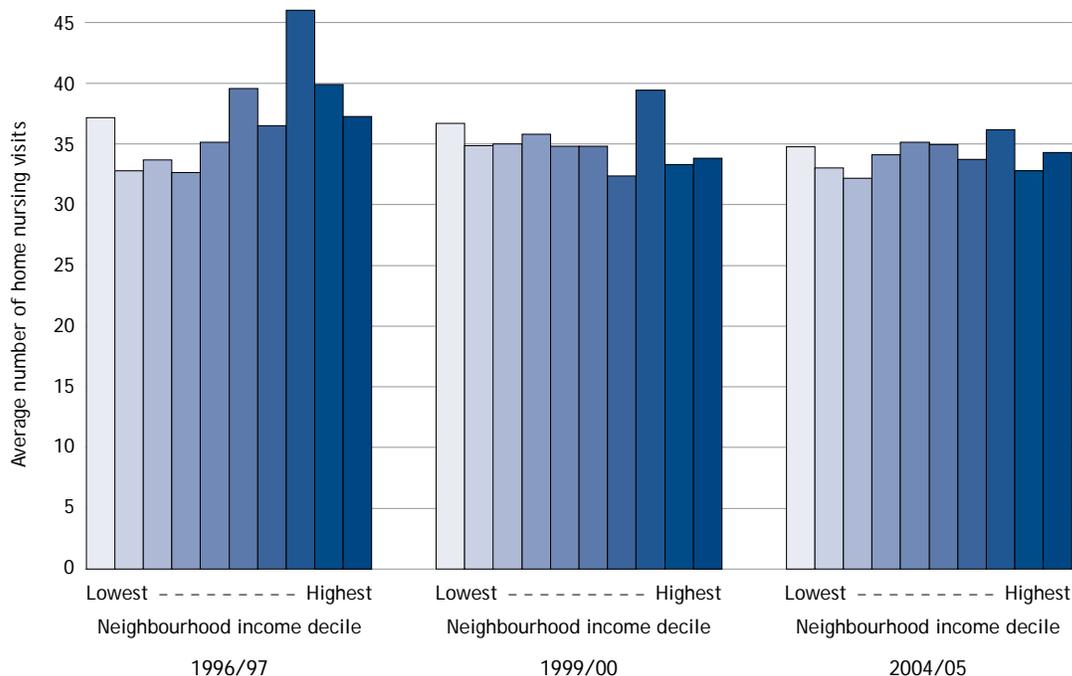
**Figure 14» Average number (intensity) of home care nursing visits per long-term client, by age group and year (age and sex standardized) and sex**



**Figure 15» Percentage of long-term users of home health services who received home care nursing, by neighbourhood income decile and year (age and sex standardized)**



**Figure 16» Average number (intensity) of home care nursing visits per long-term client, by neighbourhood income decile and year (age and sex standardized)**





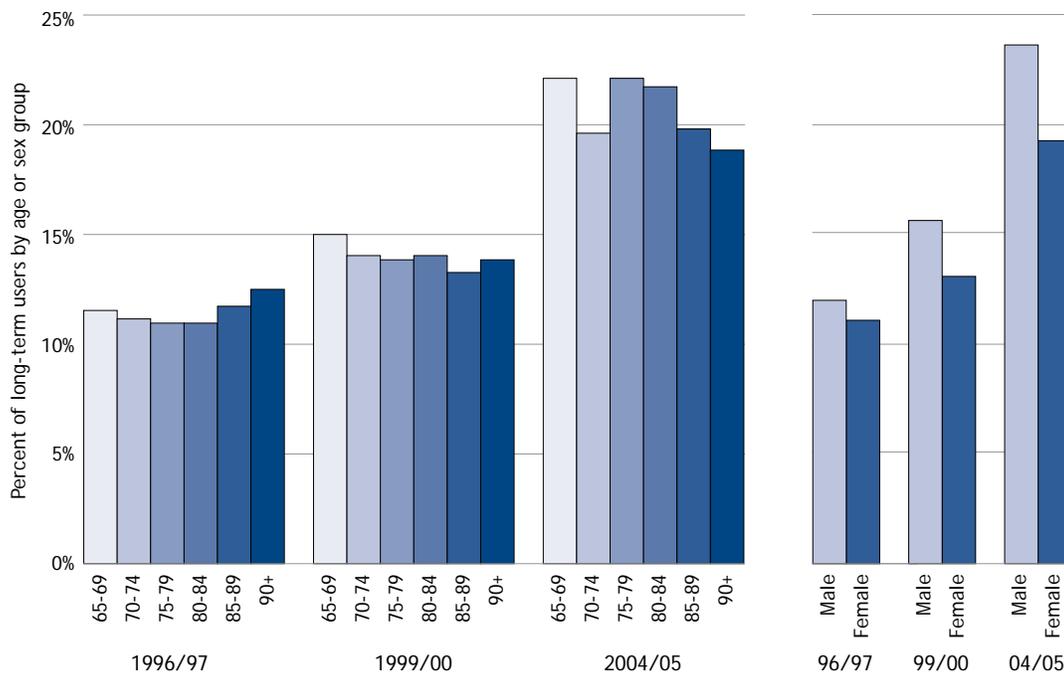
At the beginning of the study, those in the highest neighbourhood income decile were most likely to receive a visit from a home care nurse, at 28 percent, while those in the lowest decile were least likely, at 20 percent (Figure 15). By 2004/05, rates of use of home nursing care had risen for all income groups and the gap between the highest and lowest deciles had narrowed somewhat, to 34 percent and 30 percent respectively. In addition, by the end of the study, the intensity of use of home nursing care varied much less by neighbourhood income decile, while the average intensity overall declined somewhat (Figure 16).

### Occupational therapy

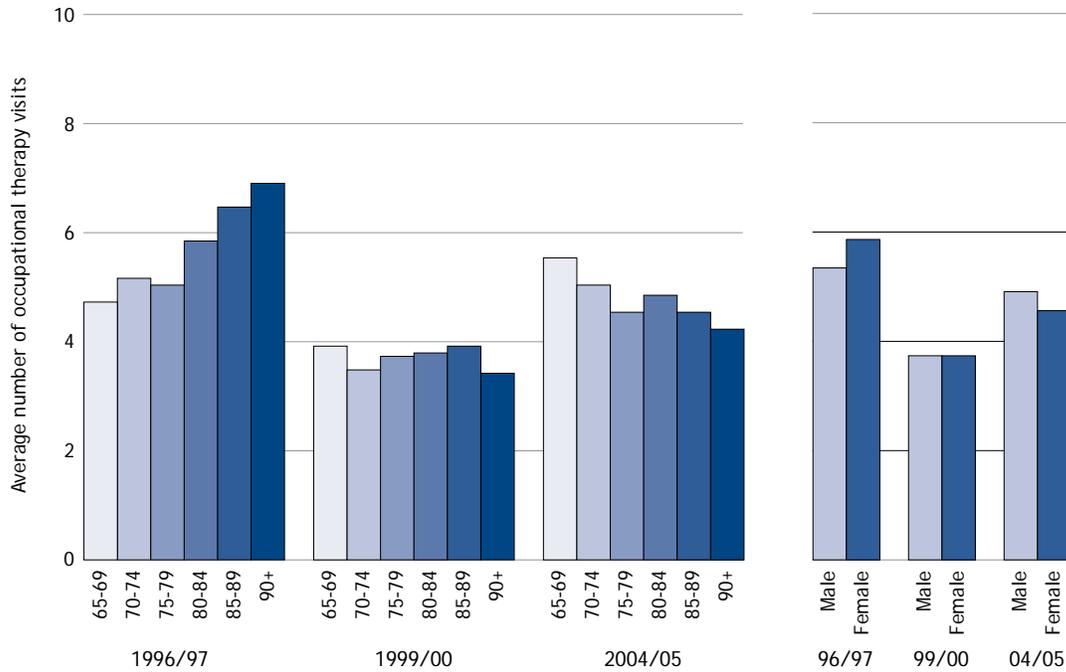
The charts below show both the likelihood of long-term users of home health services receiving at least one occupational therapy visit by age-group, sex and year (Figure 17) and the average amount or intensity of occupational therapy service given at least one visit

(Figure 18). At the beginning of the study all age groups had relatively similar rates of occupational therapy, at between 11.4 percent and 12.5 percent. By 2004/05, the rates of occupational therapy visits had increased for all long-term users, but the relative increase was greater among younger age-groups and among men, so that by 2004/05 older people (19 percent vs. 22 percent for 65-69 year olds) and women (19 percent vs. 24 percent for men) had a slightly lower likelihood of receiving occupational therapy visits. As shown in Figure 18, in 1996/97, the average amount of occupational therapy was greater with higher age. Women received more visits than men. Over time, this relationship reversed, so that by 2004/05, the oldest age group received on average slightly fewer visits than the youngest age-group and women received fewer visits than men. Overall, the average number of visits fell (by one visit per year to an average of 4.7 visits) for both men and women.

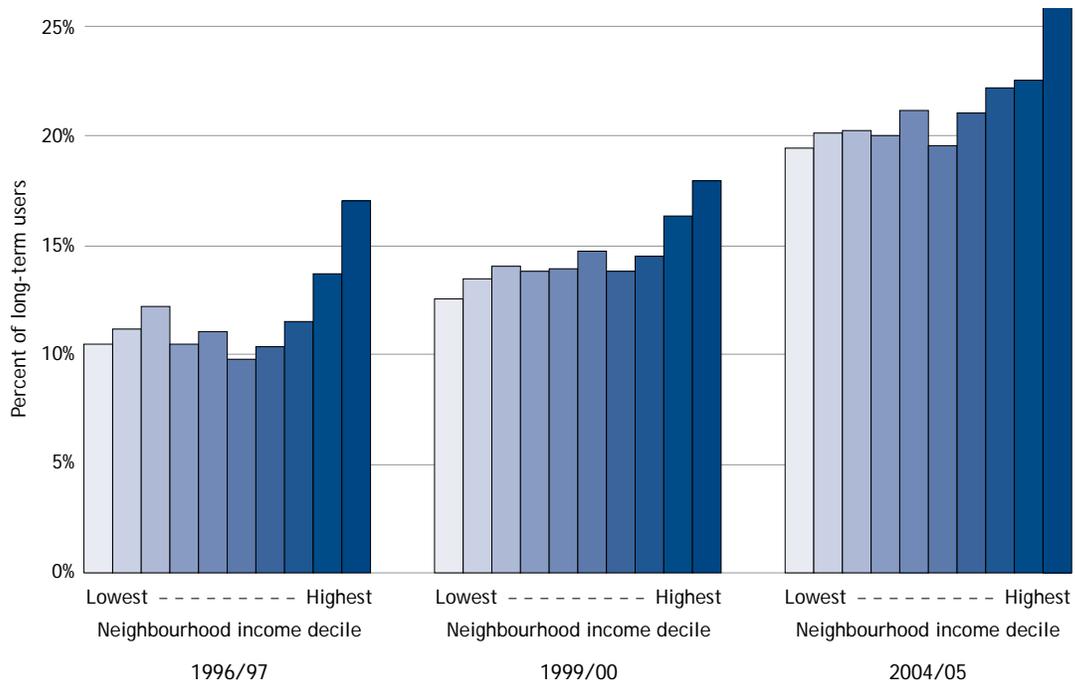
**Figure 17» Percentage of long-term users of home health services who received occupational therapy, by age group and year (age and sex standardized) and sex**



**Figure 18» Average number (intensity) of occupational therapy visits per long-term client, by age group and year (age and sex standardized)**



**Figure 19» Percentage of long-term users of home health services who received occupational therapy, by neighbourhood income decile and year (age and sex standardized)**





**Figure 20» Average number (intensity) of occupational therapy visits per long-term client, by neighbourhood income decile and year (age and sex standardized)**

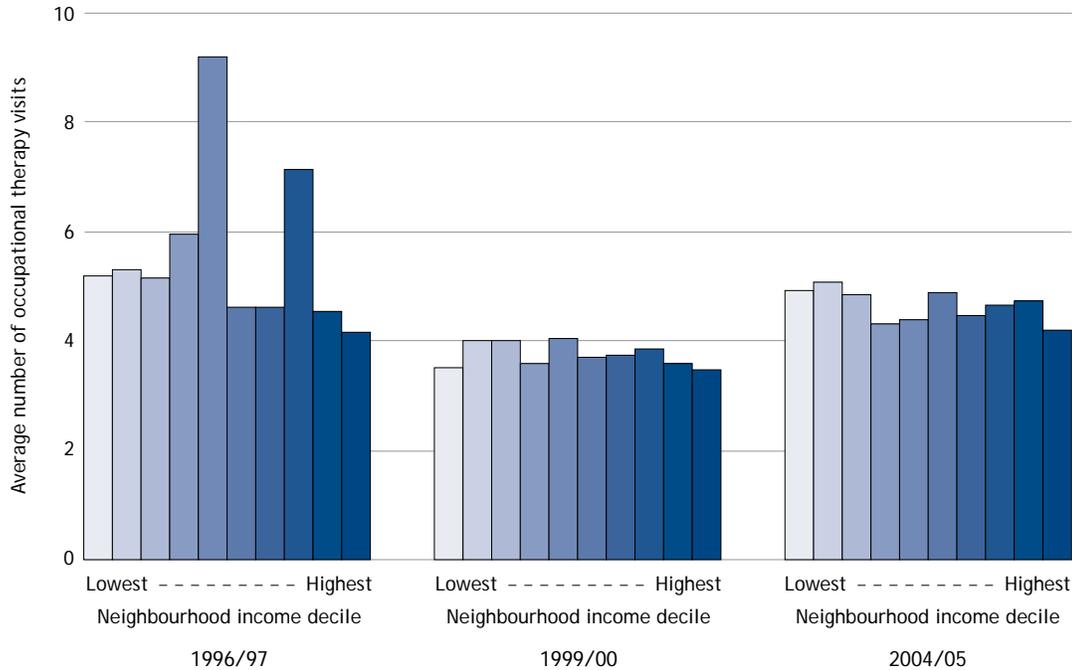


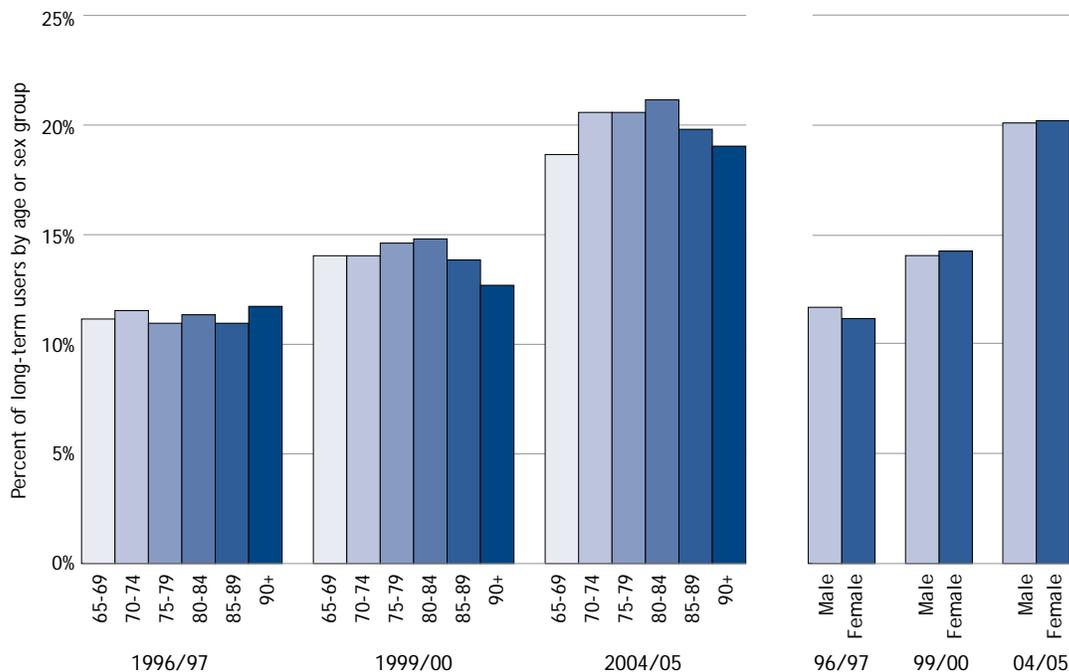
Figure 19 depicts the proportion of long-term users of home health services who received occupational therapy by neighbourhood income decile and year. The likelihood of receiving at least one occupational therapy visit was greatest among those living in neighbourhoods with the highest income. At the beginning of the study the percentage of long-term home health service users receiving occupational therapy ranged from 9.7 percent in the lowest income decile (decile 1) to 17 percent in the highest decile (decile 10). By 2004/05, the likelihood of receiving at least one occupational therapy visits had increased to 19.5 percent in the lowest and 26.4 percent in the highest decile. The intensity of occupational therapy visits shows no relationship with neighbourhood income. In 1996/97 the average number of visits varied between 4.1 and 9.2 among income deciles. Over time, the average number of occupational therapy visits decreased for all income groups. By 2004/05, the average number of visits varied between 4.2 and 5.1 visits.

### Physiotherapy

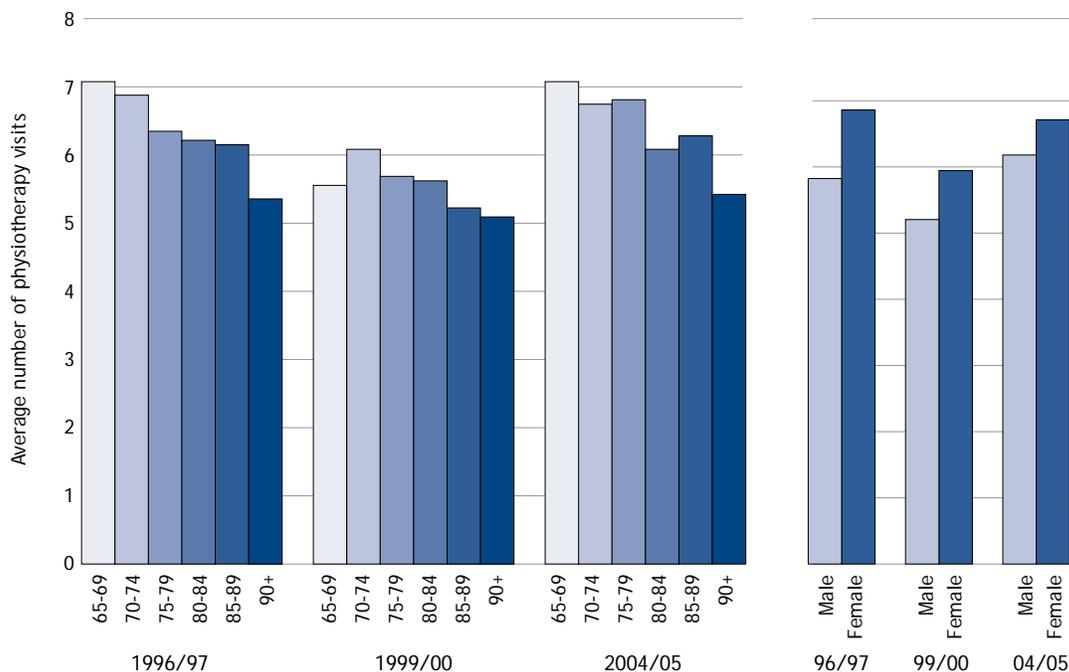
The charts below show both the likelihood of long-term users of home health services receiving at least one physiotherapy visit by age group, sex and year (Figure 21) and the average amount or intensity of physiotherapy service given at least one visit (Figure 22). At the beginning of the study, all age groups had similar rates of physiotherapy, at between 11 and 12 percent. By 2004/05, the rates of physiotherapy visits had increased for all long-term users; 18.6 percent of 65- to 69-year-olds and 21.2 percent of 80- to 84-years-olds received physiotherapy. Women and men had equal chances of receiving physiotherapy.

In 1996/97, the average amount of physiotherapy declined slightly with higher age, and men received fewer visits than women (Figure 22). Over time, this relationship remained stable with the average intensity of physiotherapy being the same at the start and end of the study. In 2004/05, the oldest age-group received on average 5.4 visits, and the youngest group received 7.1 visits. On average, men received six visits, while women received 6.5.

**Figure 21» Percentage of long-term users of home health services who received physiotherapy, by age group and year (age and sex standardized) and sex**

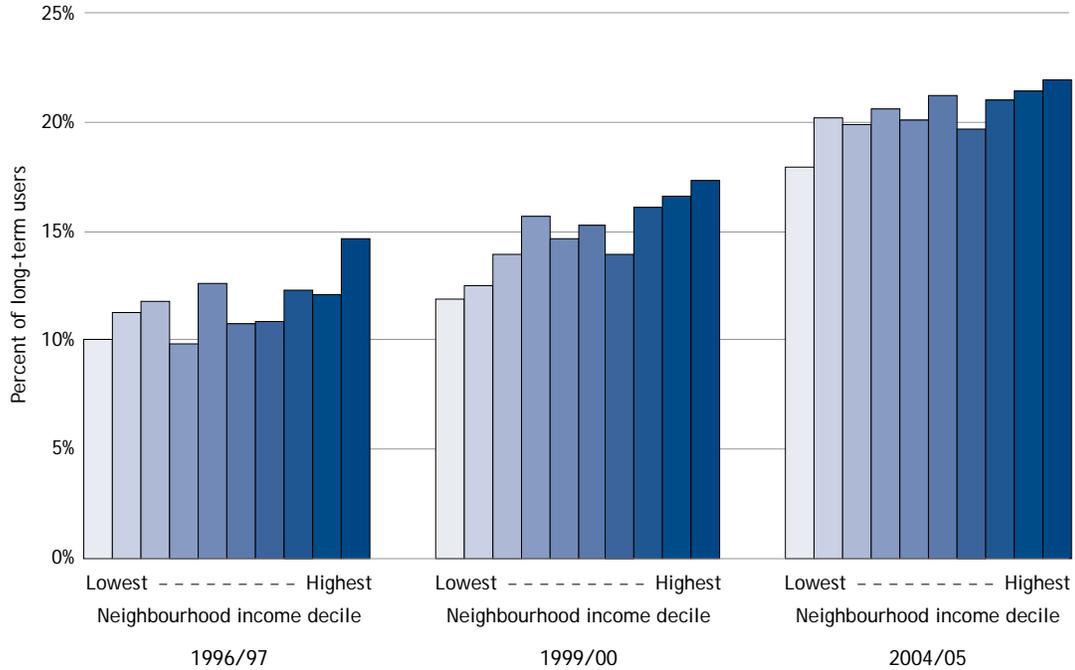


**Figure 22» Average number (intensity) of physiotherapy visits per long-term client, by age group and year (age and sex standardized) and sex**

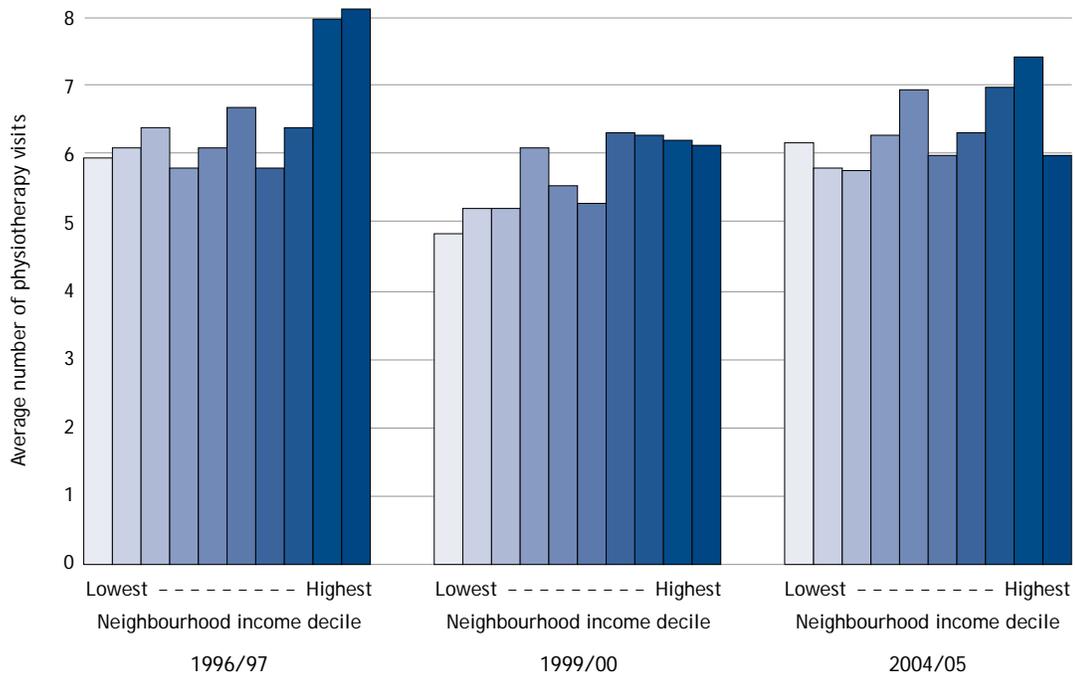




**Figure 23» Percentage of long-term users of home health services who received physiotherapy, by neighbourhood income decile and year (age and sex standardized)**



**Figure 24» Average number (intensity) of physiotherapy visits per long-term client, by neighbourhood income decile and year (age and sex standardized)**



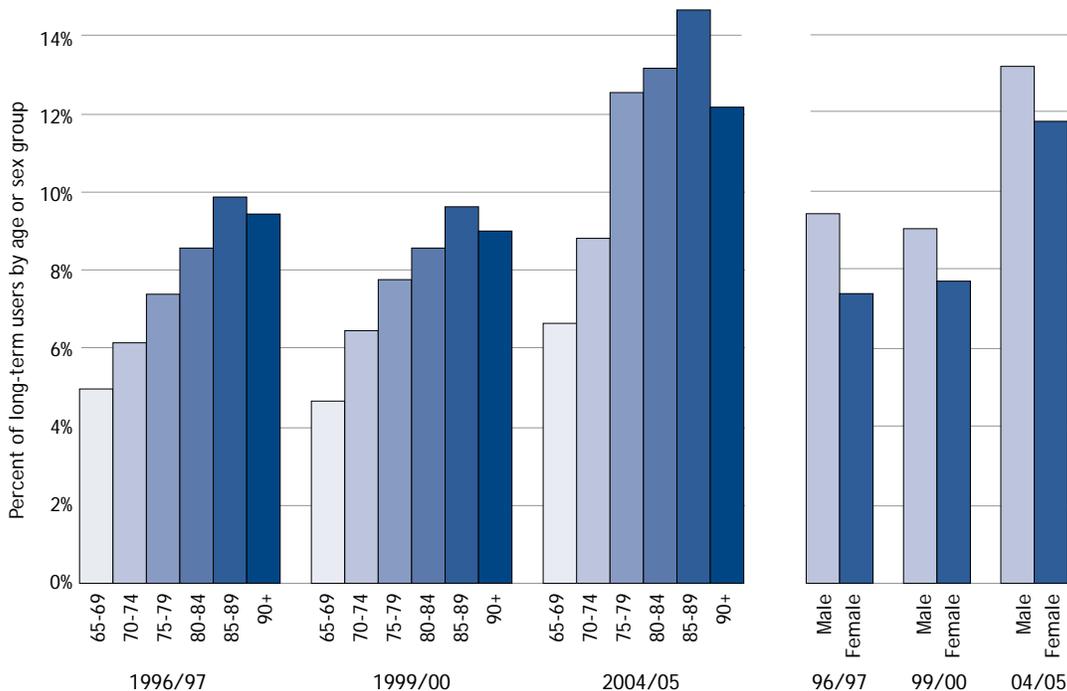
As shown in Figure 23, at the beginning of the study the rates of long-term users who received physiotherapy varied from a low of 9.9 percent in the lowest income decile to a high of 14.7 percent in the highest decile. By 2004/05, rates of physiotherapy increased across all income groups to 18 percent of the lowest income decile long-term users and 21.9 percent of those in the highest decile. The intensity of physiotherapy was the same at the start and end of the study and showed no relationship with neighbourhood income.

### Adult Day Program

The charts below show the likelihood of long-term users of home health services having at least one Adult Day Program visit by age group, sex and year (Figure 25) and the average amount or intensity of Adult Day Program given at least one visit (Figure 26). The likelihood of

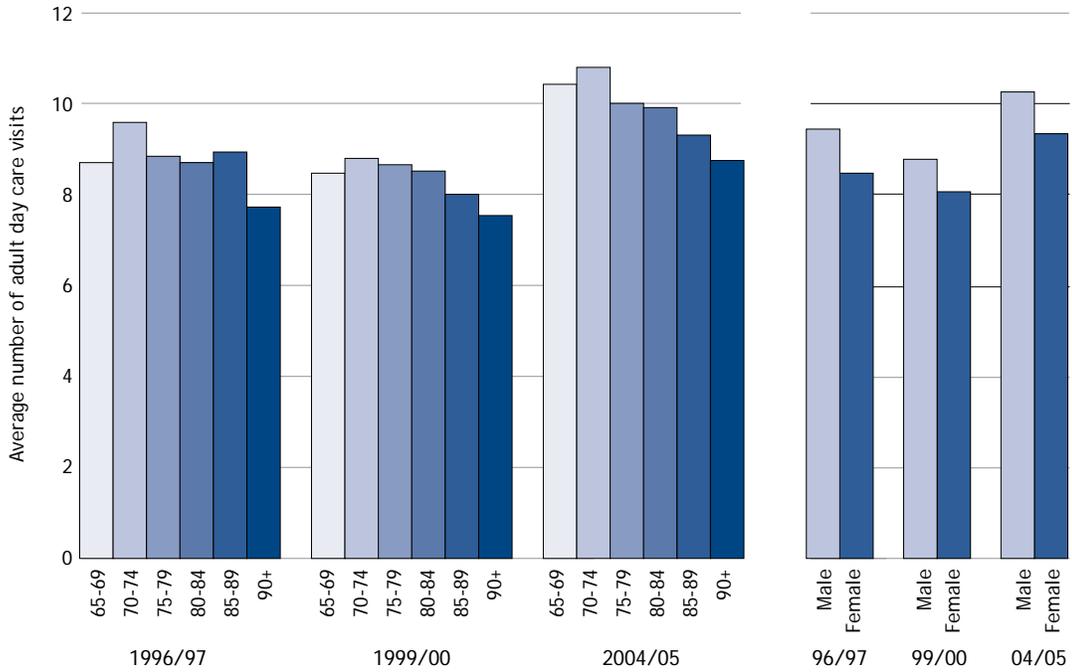
Adult Day Program use increased with age, up to age 90, and then decreased slightly thereafter. Over time, this age-related relationship remained, but the overall use of Adult Day Programs rose. At the start of the study the lowest Adult Day Program use was in the youngest age group at five percent, the highest use was in the 85 to 89 years age group at just over 9.9 percent, and the use in the 90 plus group was 9.4 percent. Ten years later, the likelihood of Adult Day Program use had increased to 6.7 percent, 14.6 percent, and 12.2 percent respectively. Men had a slightly higher likelihood of visiting Adult Day Programs (about one percent). The average amount of Adult Day Program use decreased with increasing age (from 10.2 to 8.7 visits from the youngest to the oldest group, in 2004/05), and men received on average one more visit than women (10.3 vs. 9.3 visits).

**Figure 25» Percentage of long-term users of home health services who used Adult Day Programs, by age group and year (age and sex standardized) and sex**

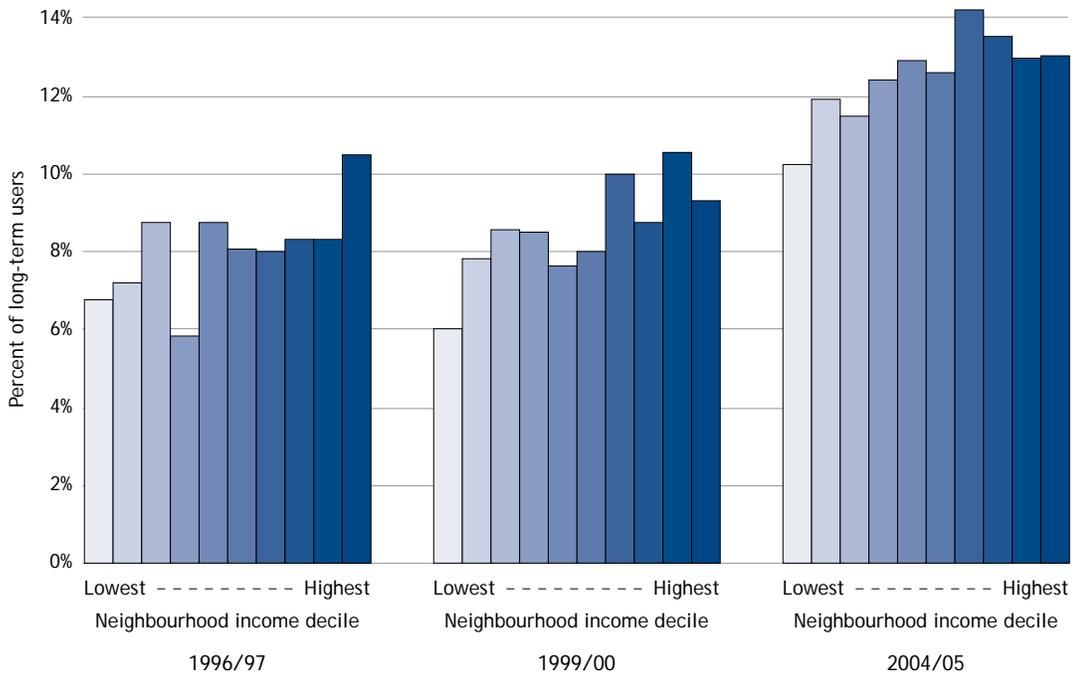




**Figure 26» Average number (intensity) of Adult Day Program visits per long-term client, by age group and year (age and sex standardized) and sex**



**Figure 27» Percentage of long-term users of home health services who used Adult Day Programs, by neighbourhood income decile and year (age and sex standardized)**



**Figure 28» Average number (intensity) of Adult Day Program visits per long-term client, by neighbourhood income decile and year (age and sex standardized)**

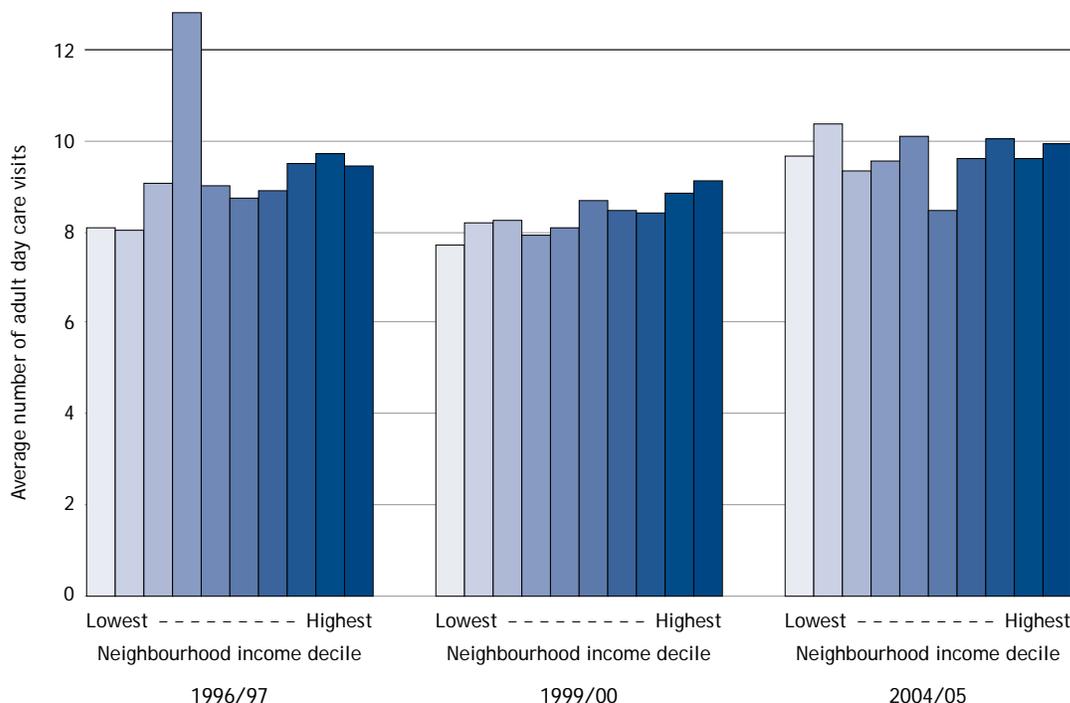


Figure 27 shows the likelihood of having at least one Adult Day Program visit by neighbourhood income decile and year. On average, there was a slightly higher likelihood for Adult Day Program visits in the higher income groups (but the relationship was not linear) and this overall trend remained. In 1996/97 the likelihood for Adult Day Program use was 6.8 percent in the lowest decile and 10.5 percent in the highest; by 2004/05 these rates had increased to 10.2 percent and 13 percent respectively. The amount of Adult Day Program was not related to income and increased very slightly over time, from an average of nine visits in 1996/97, to an average of 9.7 visits in 2004/05 (Figure 28).



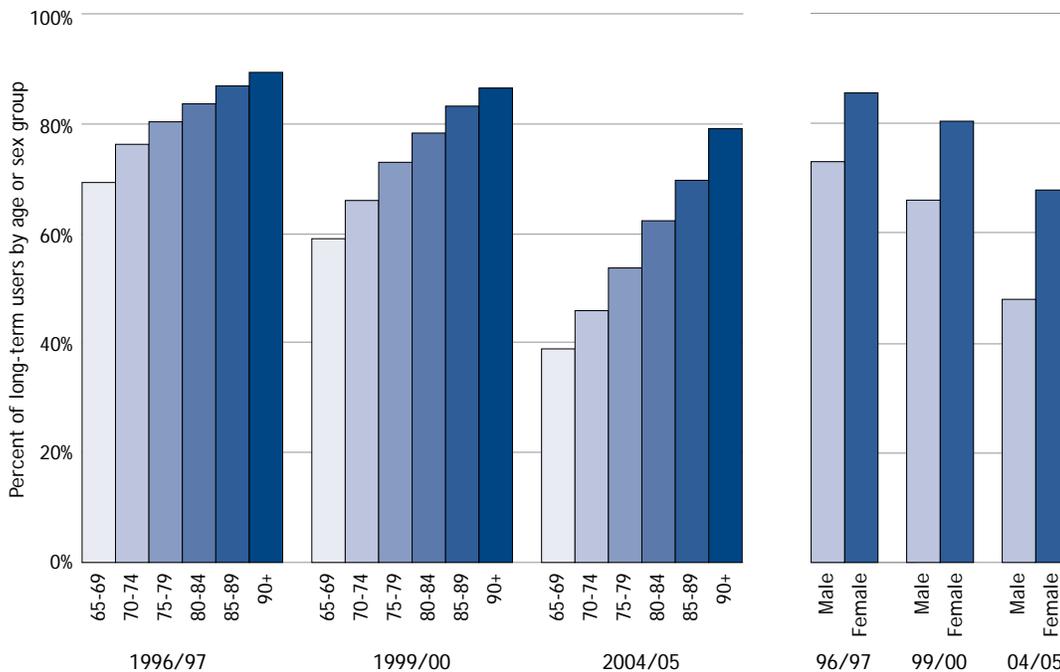
## Home support

The charts below show both the likelihood of long-term users of home health services receiving at least one home support visit by age-group, sex and year (Figure 29) and the average amount or intensity of home support given at least one visit (Figure 30). The likelihood of receiving home support increased with age. Over time, this relationship remained unchanged, but the overall rates of home support fell. At the start of the study the lowest rate of home support was in the youngest age group at just over 69 percent, and the highest rate was in the oldest age group at just over 89 percent. By 2004/05, the rates of home support had declined to 39 percent and 79 percent respectively. Women had a greater chance of receiving home support than men; in 2004/05 the rates for women

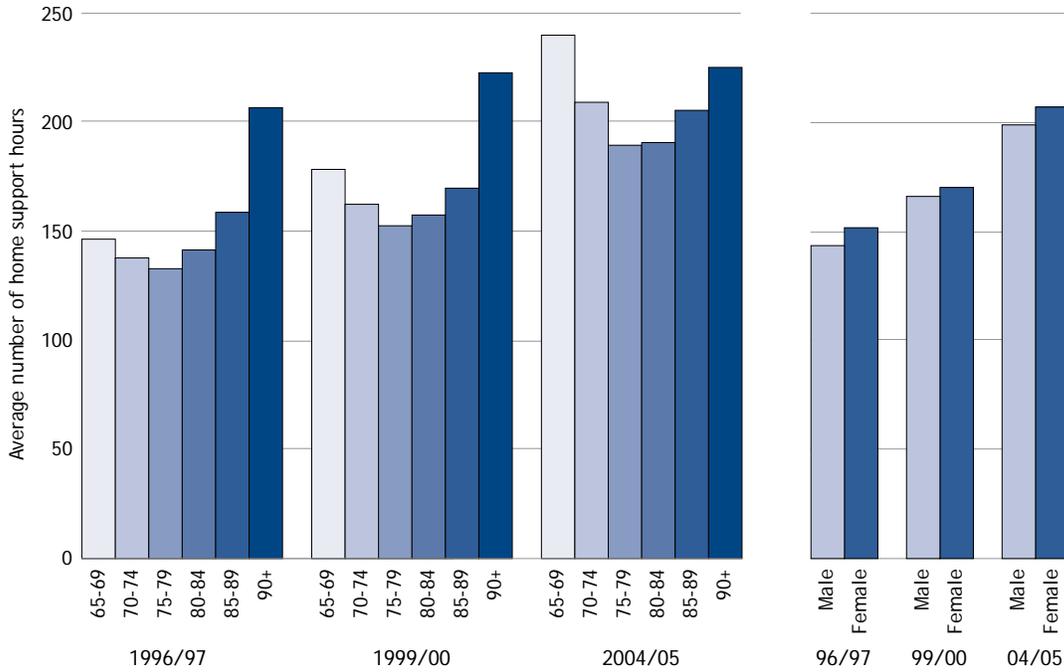
and men were 68 percent and 48 percent respectively, but the amount of home support received was virtually the same for both sexes. Over time, the average number of home support hours per person, given at least one home support visit, rose.

Figure 30 shows that at the start of the study, the oldest age groups received the greatest amount of home support. By 2004/05, those in the youngest age group received on average slightly more hours, than those in the oldest group. By 2004/05, long-term users in the 65-69 years age-group received on average 240 hours of home support, those between 74-84 years received 190 hours, and the oldest age group received 224 hours per year.

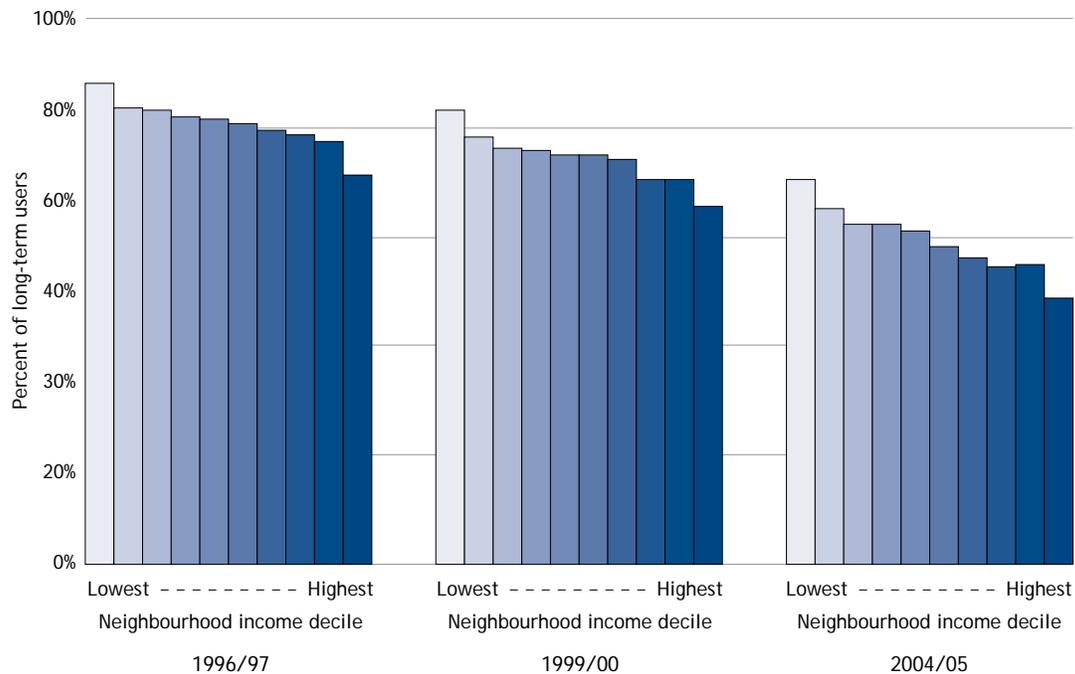
**Figure 29» Percentage of long-term users of home health services who received home support, by age group and year (age and sex standardized) and sex**



**Figure 30» Average number (intensity) of home support hours per long-term client, by age group and year (age and sex standardized) and sex**



**Figure 31» Percentage of long-term users of home health services who received home support, by neighbourhood income decile and year (age and sex standardized)**





**Figure 32» Average number (intensity) of home support hours per long-term client, by neighbourhood income decile and year (age and sex standardized)**

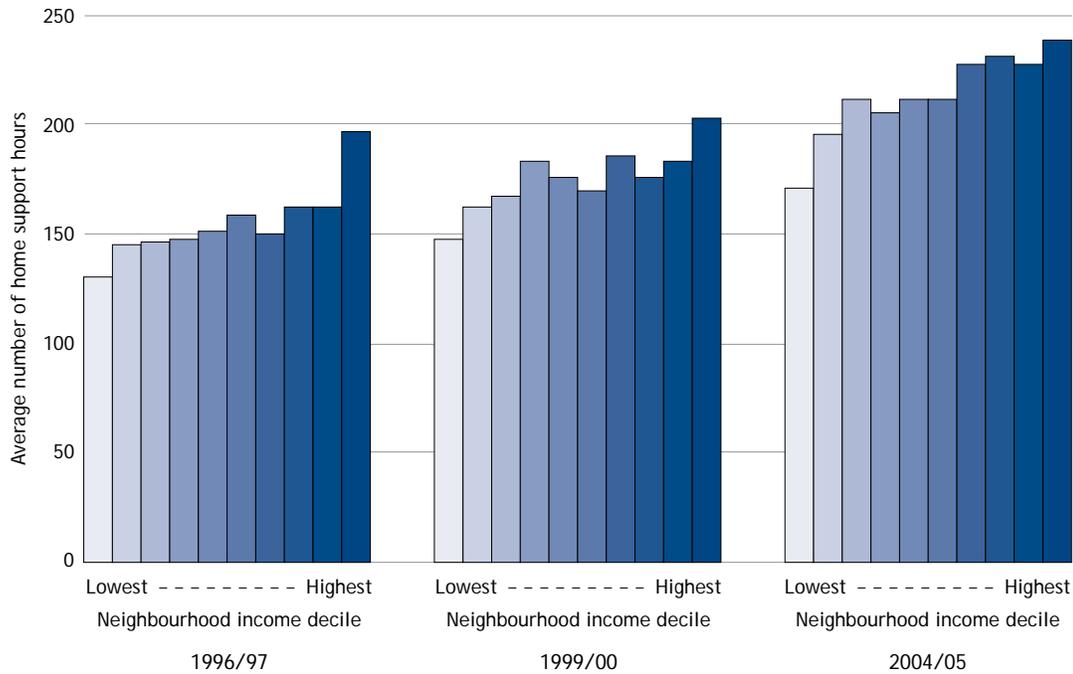


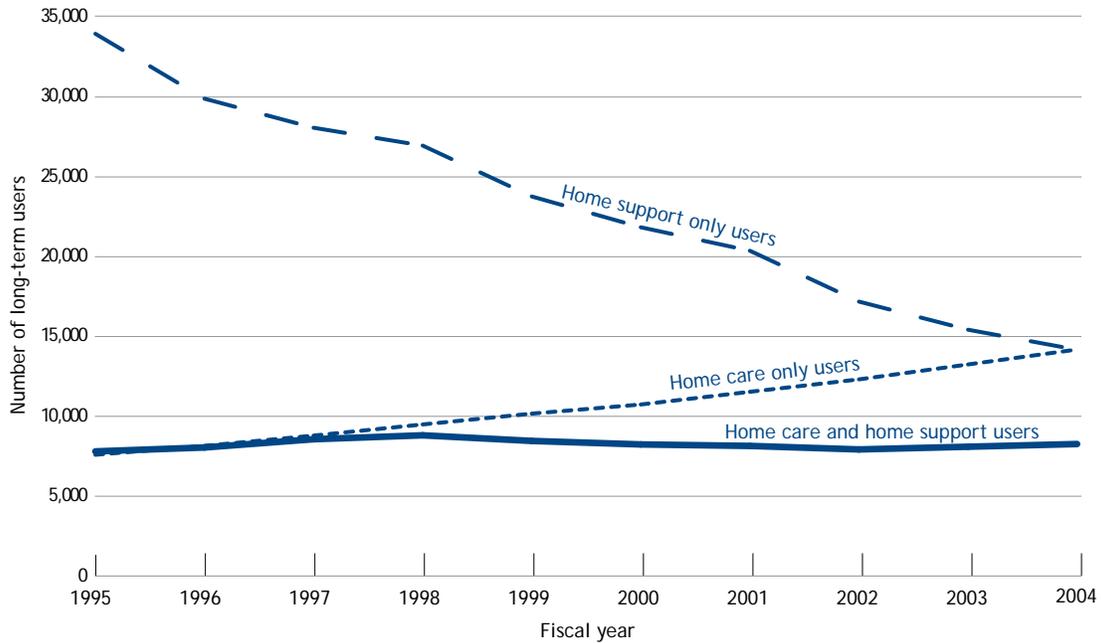
Figure 31 shows the relation between neighbourhood income and the likelihood of receiving home support services, with higher proportions of home support users in the lower income groups. In 1995/96, 88.1 percent in the lowest income group received home support, compared to 71.3 percent in the highest income neighbourhoods. Over time, the rates of home support declined across all income groups. By the end of the study, the rates for home support use were 70.7 percent in the lowest income group, and 48.6 percent in the highest.

In contrast, the intensity of home support that is, the amount of home support received, showed an opposite trend: as income increased so did the amount of home support received for all income groups. By 2004/05, the lowest income group received on average 171 hours of home support per year, while the highest received 238 hours.

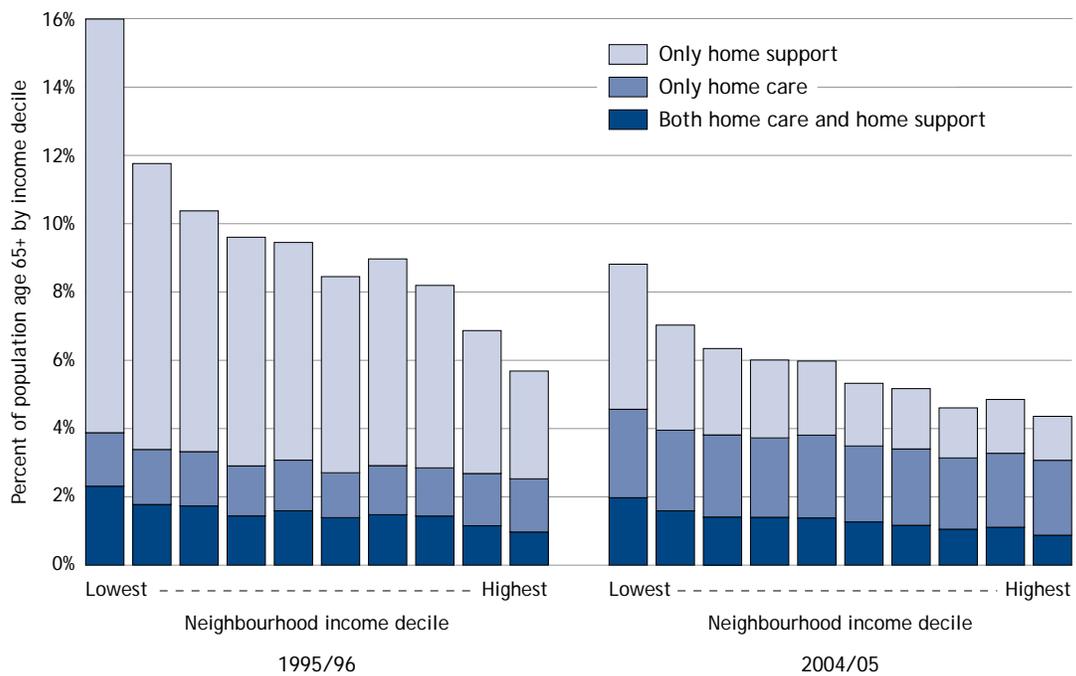
Figures 33 and 34 provide a different way of looking at the trends in use of different home health services over time. These charts create three categories of long-term home health service users: those who use home support only, those who use home care services only (e.g. home nursing, home therapy) and those who use both home support and home care. The decline in the overall number of long-term home health service users is driven by the decline in individuals who use only home support. The number of individuals who used home care services only increased somewhat, but this increase was not enough to offset the decline in home support.

The proportion of long-term home health service users who use only home support shows the strongest (negative) relationship with neighbourhood income decile. There is a decline in home support only use across all deciles over time, but the relative decrease is largest in the lowest neighbourhood income decile.

**Figure 33» Number of long-term home health users by aggregated type of service use (home support and home care) and year**



**Figure 34» Long-term home health users by aggregated type of service use (home support and home care) and neighbourhood income decile, 1995/96 and 2004/05**





## 6. Health Status

### CHAPTER SUMMARY

- Half of the general population of seniors in BC have no major diagnoses, and this is stable over time.
- Based on number of major ADGs, long-term users of home health services have much poorer health status than the total population of seniors.
- The likelihood of being a long-term user increases substantially with an increasing number of major diagnoses.
- For long-term users, the average number of major diagnoses increased over time.
- There has been an increase in the proportion of long-term home health users with higher needs / poorer health status over time.
- A substantial number of elderly people who have multiple major diagnoses do not use any publicly-funded home health services in a given year.
- An overall decrease in the likelihood of being a long-term user occurred across all health status groups; that is, while the morbidity profile of the long-term user group increased, the likelihood of being a long-term user given a certain level of morbidity was lower in 2004/05 compared to 1995/96.

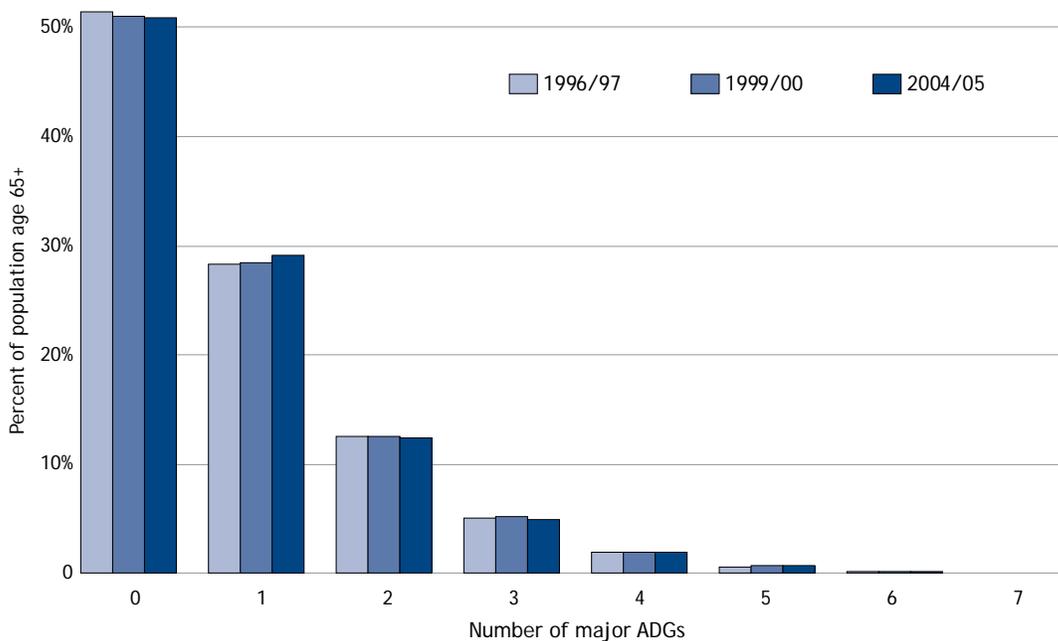
Health status was examined using the Johns Hopkins major Aggregated Diagnosis Groups (ADGs). ADGs measure the types of conditions experienced by an individual, using a combination of diagnoses from hospital and physician visits data. Examples of ADGs include chronic medical conditions, injuries, psychosocial conditions, and malignancy. The ADGs are unique in that a person can only be classified once in any one ADG but individuals can have multiple ADGs reflecting the number of different types of conditions experienced. A sub-set of eight ADGs have been classified as ‘major’ ADGs\* based on expected utilization and short-term outcomes (56).

Figure 35 provides a picture of the health status for the entire BC population aged 65 and older by number of major ADGs. Just over 50 percent did not have any diagnoses considered “major” according to the ADG classification system. Close to 30 percent of the population in each year was diagnosed with one major ADG, and less than one percent had five or more major ADGs. These percentages remained quite stable over time.

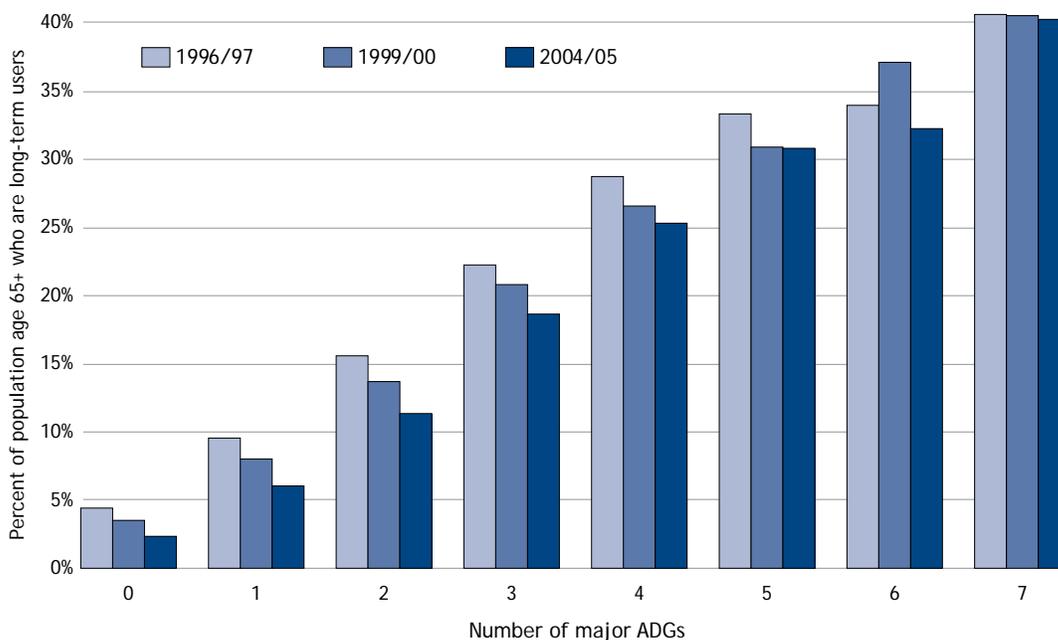
Figure 36 depicts the proportion of people who were long-term users of home health services according to the number of major ADGs they have (we also looked at eight major ADGs, but there were so few people in that group it is not shown on the graph). As expected, the likelihood of being a long-term user increases substantially with increasing numbers of major ADGs. One in four seniors who have four major ADGs, for example, were long-term home health users in 2004/05. About four percent of individuals who have no major ADGs were long-term users of home health services in 1994/95. This decreased to two percent by 2004/05. In fact, the likelihood of being a long-term user declined for almost all groups; there were decreases in use regardless of morbidity profile, though the relative declines were greater with lower levels of morbidity (as measured by number of major ADGs).

\* Major ADGs include: Time Limited – Major; Time Limited – Major, Primary Infections; Likely to Recur – Progressive; Chronic Medical – Unstable; Chronic Specialty – Unstable, Orthopedic; Injuries/Adverse Effects – Major; Psychosocial – Recurrent or Persistent, Unstable; Malignancy.

**Figure 35» Percentage of total population age 65 and older, by number of major ADGs and year**

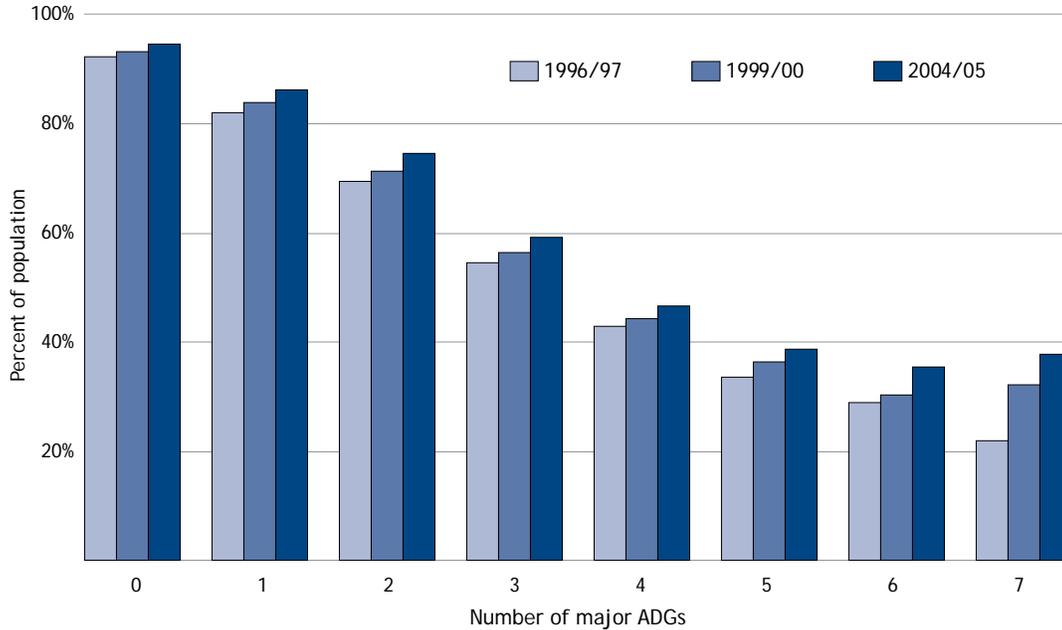


**Figure 36» Long-term users of home health services as a percentage of total population age 65 and older, by number of major ADGs and year**





**Figure 37» Percentage of total population who are non-users of home health services, by number of major diagnoses and year**

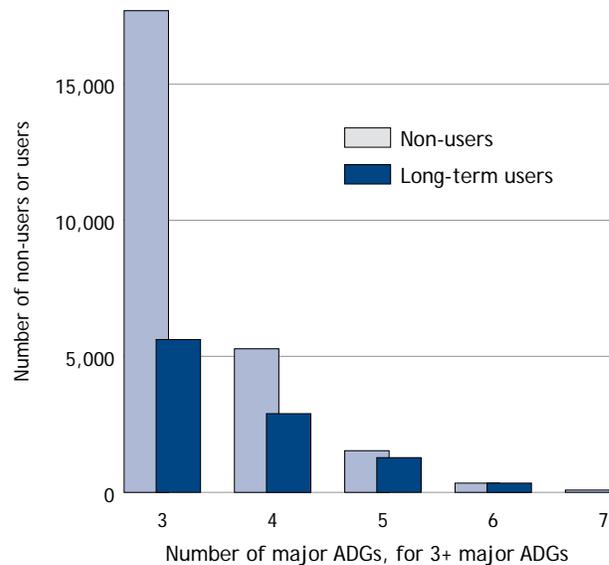


The fact that the likelihood of being a long-term user increases with an increasing number of major diagnoses implies that the likelihood of being a non-user will probably decline as morbidity increases. (The two are not exactly complementary, because some people are short-term users and others are in residential care.) Figure 37 confirms this, showing that more than 9 in 10 individuals who have no major diagnoses do not receive any publicly-funded home health services. Over time, the likelihood of being a non-user increases for all morbidity categories. Also of note is that nearly 60% of individuals with three major ADGs in 2004/05 are non-users, as are nearly half of those with four major ADGs and close to 40% of individuals with five, six or seven.

Another way to look at this is to examine at the actual numbers of long-term users and non-users by number of major diagnoses. Figure 38 shows these numbers for individuals who have three to seven major ADGs in 2004/05. There are relatively small numbers of individuals with five, six and seven major ADGs, and there are about equal numbers of non-users and users, indicating

that there may be some unmet need for services among community-dwelling seniors. Non-users dominate among individuals with three or four major ADGs. It is difficult to say how major ADGs translate to need for home health services, but here again there is at least some potential that there is unmet need.

**Figure 38» Number of non-users and long-term users by number of major ADGs, for 3 major ADGs+, 2004/05**



Part of what is influencing the shift toward greater morbidity among long-term users over time is that there are fewer seniors who use long-term home health services. Another perspective looks at the distribution of number of ADGs within the long-term users, as shown on Figure 39. Between 1996/97 and 2004/05 the proportion of long-term home health users with no major ADGs declined from 26 to 20 percent while the proportion of long-term home health users with two major ADGs increased very slightly from 22 to 23 percent and those with three or more major ADGs increased from 22 to 28 percent of the total. In other words, there has been a shift within the long-term home health service user population to individuals with a greater number of major conditions.

During the same time period, the distribution of short-term users of home health services by number of ADGs remained stable, while the actual number of short-term users increased somewhat (Figure 40). Eleven percent of short-term home health users had no major ADGs in all three years, while 28 percent had two major ADGs and 34 percent had three or more, which indicates higher morbidity than long-term users.

The Expanded Diagnosis Clusters (EDCs) provide an alternate view of the health status of home health users. EDCs classify diagnosis information so as to identify common conditions experienced by home health users. High prevalence conditions among long-term users in 1996/97 include hypertension (33 percent), anxiety/neuroses (20 percent), congestive heart failure (19 percent), acute lower respiratory tract infection (19 percent), dementia/delirium (17 percent), urinary tract infections (16 percent), cardiac arrhythmia (15 percent), ischemic heart disease (14 percent) and degenerative joint disease (13 percent). These high prevalence conditions have remained relatively stable over time. Specific EDCs with a relatively high proportion of long-term users include chronic skin ulcers, hip fracture and dementia/delirium.

The prevalence rates for cardiovascular conditions and dementia/delirium are higher among long-term home health users than among non-users of home health services whereas hypertension, anxiety/neuroses, degenerative joint disease and acute lower respiratory tract information are high prevalence conditions among both user and non-user groups.



Figure 39» Long-term users of home health services by number of major ADGs and year

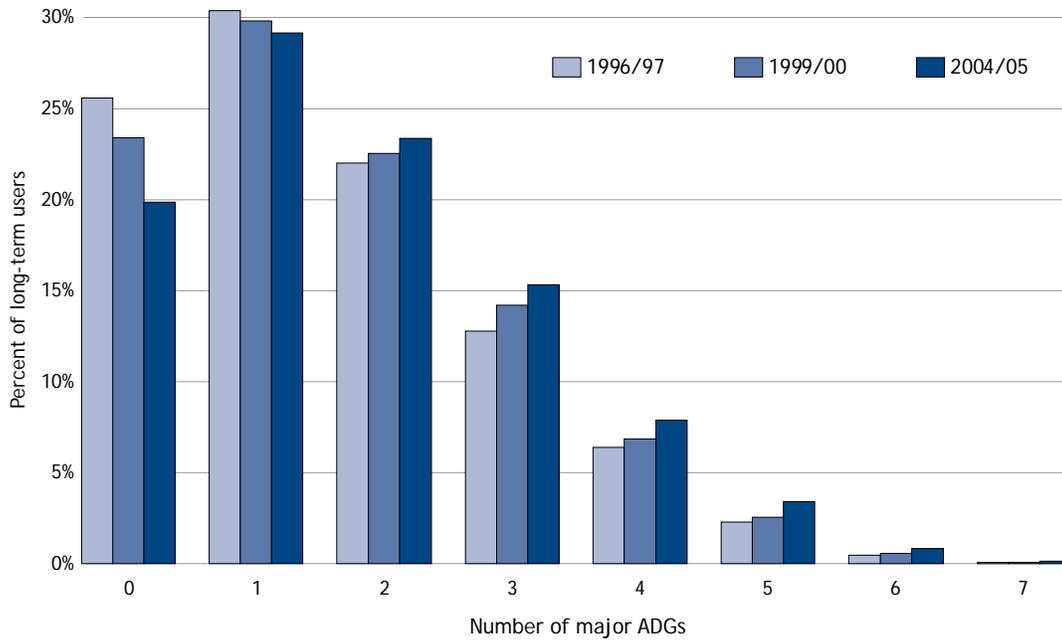
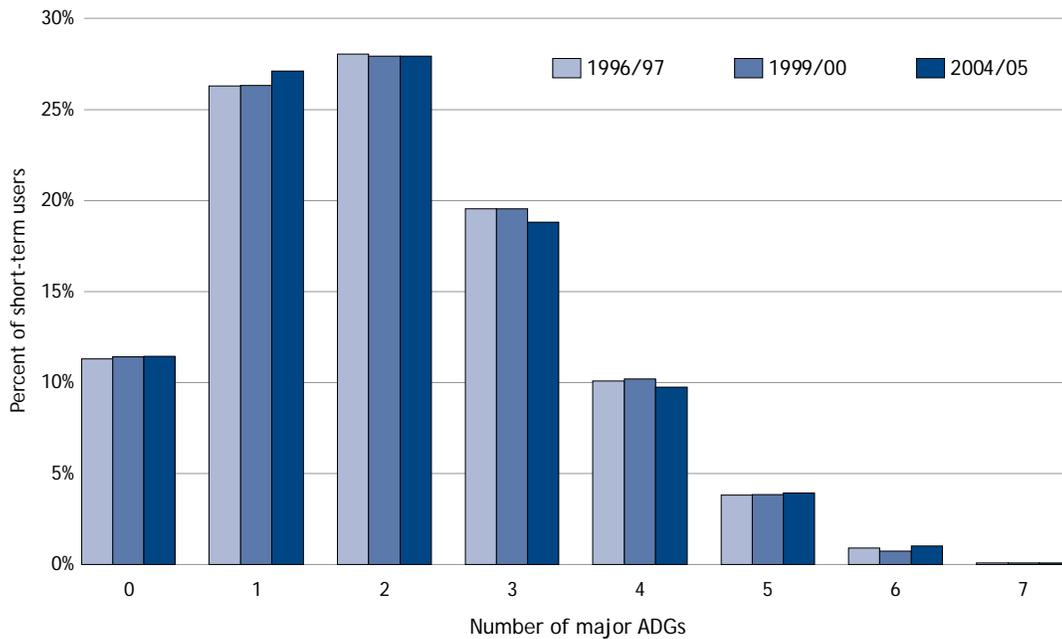


Figure 40» Short-term users of home health services by number of major ADGs and year



## 7. Use of Other Health Care Services

### CHAPTER SUMMARY

#### *Physician visits*

- The likelihood of general practitioner (GP) visits was high for all categories.
- Over time, mean numbers of GP visits increased slightly for non-users and sharply for all clients of home and community care services.

#### *Medical specialist visits*

- Likelihood of seeing a medical specialist was higher for home health service users than for non-users or facility residents. Over time, the likelihood of seeing a medical specialist increased slightly for long-term users and facility-only users, but showed no clear pattern for the other categories.
- Over time, all users of home health services who saw a medical specialist had more visits (except for short-term clients). Non-users of home health services had fewer visits and this did not change over time.

#### *Surgical specialist visits*

- Likelihood of surgical specialist use varied little among groups, except for short-term users who were more likely to have surgery, and facility residents who were least likely to have surgery. Over time, the likelihood of visiting a surgical specialist decreased slightly.
- For those who had contact with a surgical specialist, the average number of visits declined slightly for all groups of users but not for non-users.

#### *Diagnostic specialist visits*

- The vast majority of the BC population aged 65 and older had several diagnostic tests. Users of home health services were more likely than non-users or facility residents to have diagnostic visits. Over time, there was an increase in the likelihood of using diagnostic services.
- Users of home health services had more tests than non-users and facility residents.
- Everyone, over time, had more tests.

#### *Hospital admissions*

- Likelihood of hospital admission was lower for long-term users than for other users of home health services, however it was still greater than for non-users or facility residents. Over time, hospital admissions showed no clear pattern.
- Average days spent in hospital were highest for users who spent part or all of their time in facility care.
- The proportion of days spent in Alternate Level Care (ALC) was highest for those with facility days (who were either in or waiting to go into facility care).
- Over time, the proportion of hospital days that were ALC days increased for everyone.

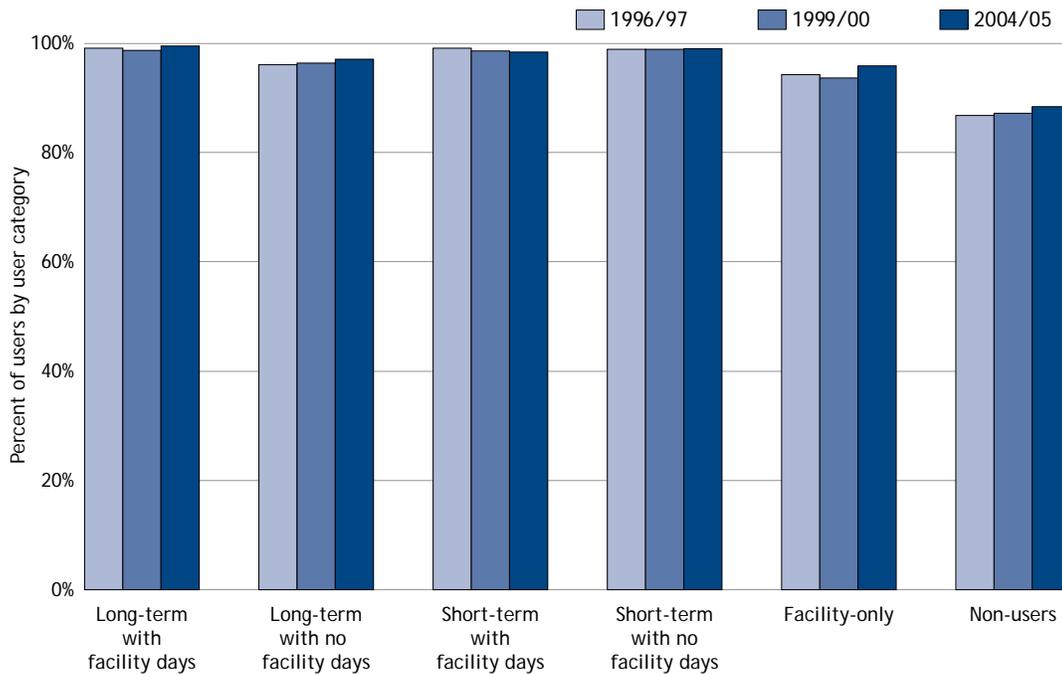
#### *Overall*

- Individuals who use home health services make greater use of other health care services.
- The use of facility days is associated with greater use of acute inpatient care
- The use of surgical day care is associated with greater use of short-term home health services.
- Home health service users increased their use of general practitioners over time far more than non-users.



## Physician visits

**Figure 41» Percentage of home health services users who have at least one visit with a general practice physician, by home health service user category and year (age and sex standardized)**



**Figure 42» Mean number (intensity) of general practice physician visits per client with one or more visits, by home health service user category and year (age and sex standardized)**

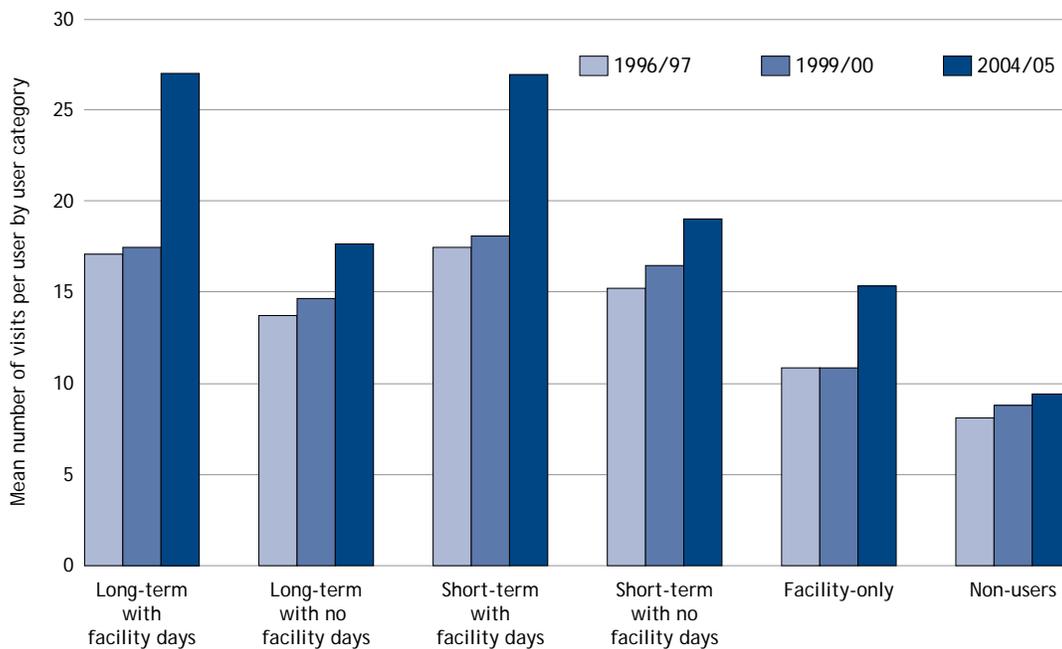


Figure 41 shows that the vast majority of seniors make at least one visit to a general practitioner each year, and this has not changed over time. The likelihood of a visit with a GP is higher among all groups that receive services from the home and community care system, at more than 90 percent likelihood for each. The intensity of use – meaning the average number of visits to GPs among individuals with at least one visit – is different across groups, and has increased over time (Figure 42). The largest increase in average number of visits was for long-term users with facility days, who had on average 17 GP visits in 1996/97 and 27 visits in 2004/05. Even non-users saw their doctor more often, increasing from an average of eight visits in 1996/97 to nine visits in 2004/05, though the increases here were far smaller.

The use of medical specialist services remained mostly stable over the period of 1996/97 to 2004/05 (Figure 43). Among long-term users who did not spend time in a facility, the rates of medical specialist visits went from 61.5 percent in 1996/97, to 64.8 percent in 2004/05, and among long-term users who also had facility days the rates were 66.9 and 74.1 percent for those same years. Non-users and facility residents had the lowest rates of medical specialist visits, from just below 40 percent at the beginning of the study to just over 40 percent at the end of the study. Figure 44 shows the average number of visits to medical specialists per person for each of the categories. Those who saw medical specialist patients and also were facility users, or who were long-term users without

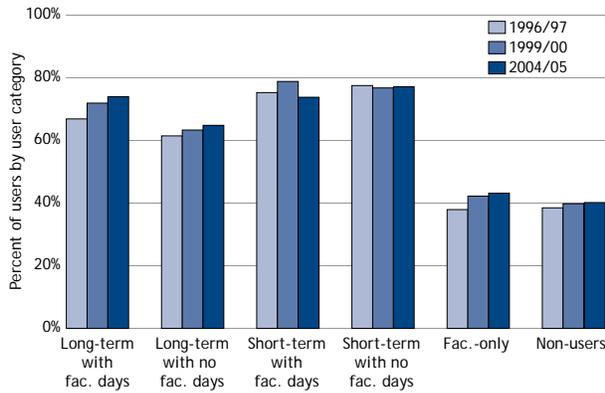
facility days, visited medical specialists more frequently. Non-users and short-term users without facility days who saw a medical specialist, had the same number of visits, on average, in 1996/97 as in 2004/05.

The age- and sex-standardized rates of surgical specialist visits remained stable across the study. Rates for both long-term and short-term users who also had facility days were around 50 percent. Short-term users without facility days had the highest rates of surgical specialist visits around 77 percent, while facility residents had the lowest rates, around 30 percent. As shown in Figure 46, patients of surgical specialists who were short-term users without facility days had on average the highest numbers of visits (between six and seven). Others averaged more than three but fewer than five visits. Over time, surgical patients in all categories – except non-users – had slightly fewer surgical specialist visits (possibly due to greater numbers of minimally invasive surgeries).

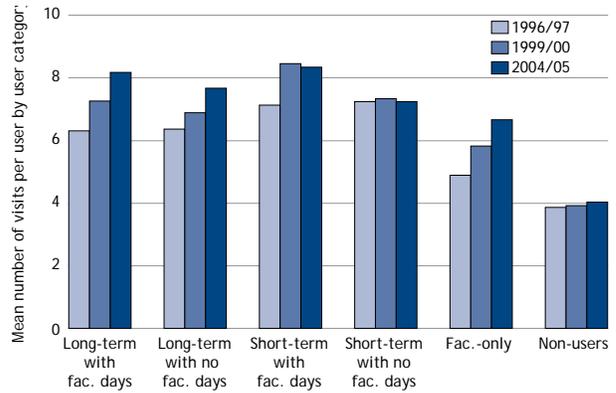
Overall the age- and sex-standardized rates of laboratory/diagnostic specialist visits increased slightly during this study. Rates for long-term users without facility days went from 82.7 to 89.5 percent and rates for non-users went from 69 to 77.3 percent. Short-term users of home health services without facility days had the highest rates of diagnostic specialist visits, from 91.5 percent at the start of this study to 95.3 percent at the end. Over time, all categories had greater numbers of diagnostic tests.



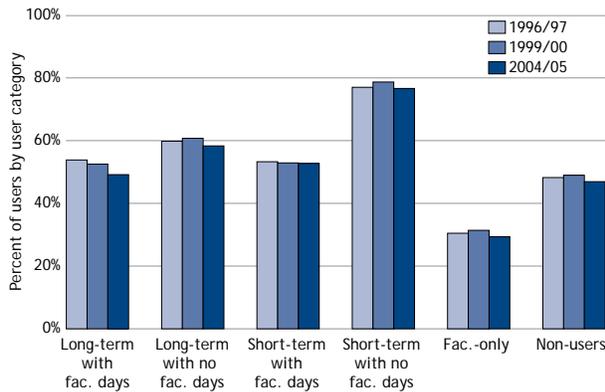
**Figure 43» Percent of home health services users with one or more visits to a medical specialist, by user category over time**



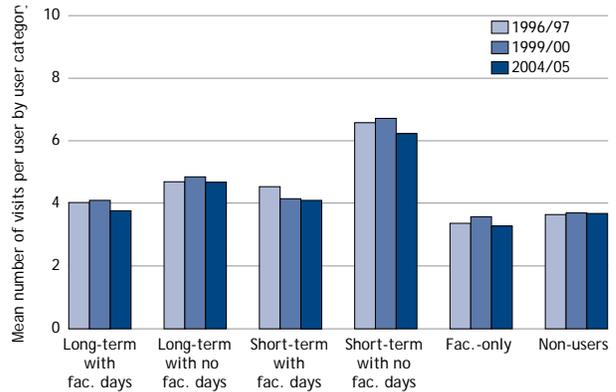
**Figure 44» Mean number of medical specialist visits per user with one or more visits, by user category over time**



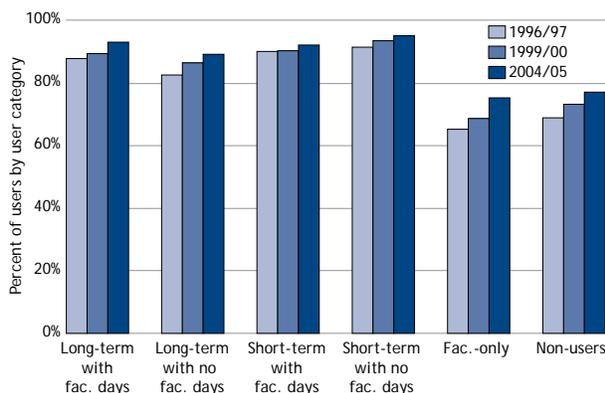
**Figure 45» Percent of home health services users with one or more visits to a surgical specialist, by user category over time**



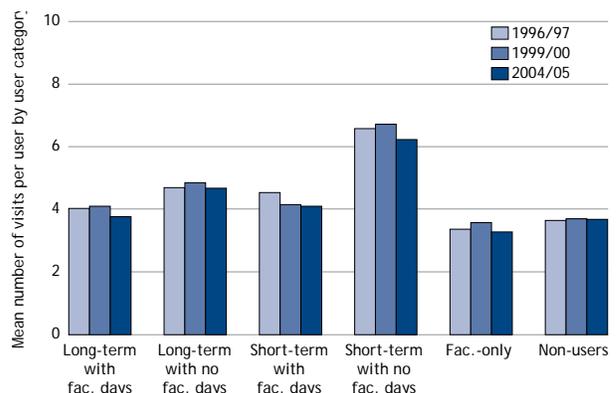
**Figure 46» Mean number of surgical specialist visits per user with one or more visits, by user category over time**



**Figure 47» Percent of home health services users with one or more visits to a laboratory/diagnostic specialist, by user category over time**



**Figure 48» Mean number of laboratory/diagnostic specialist visits per user with one or more visits, by user category over time**



## Use of hospitals

Figure 49» Hospital admissions by home health service user category and year (age and sex standardized)

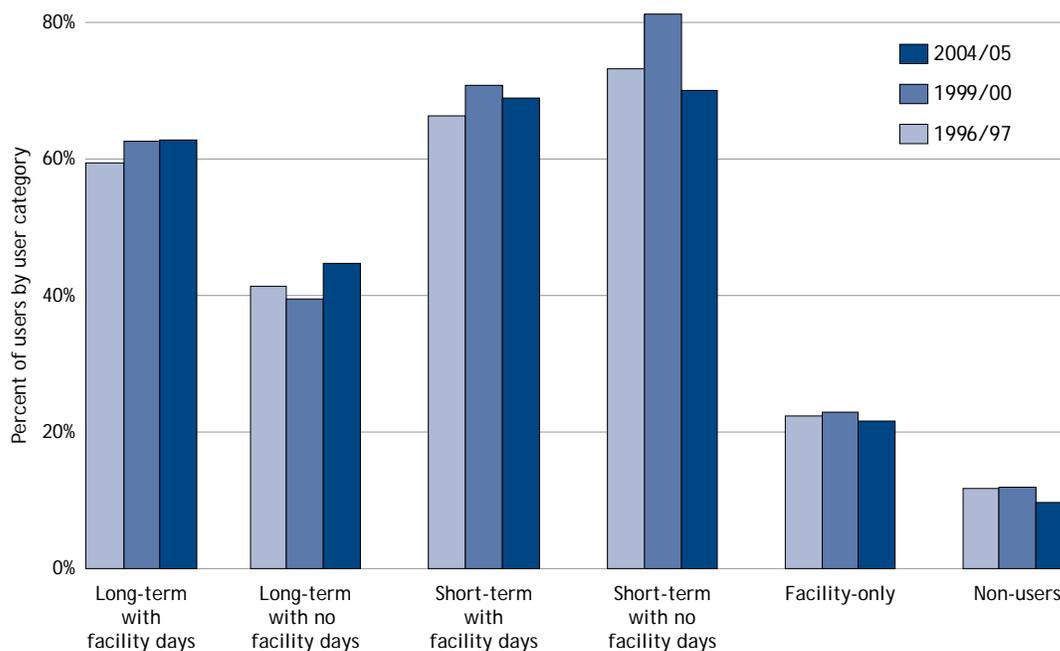


Figure 49 shows the proportion of each category of home health service users who were hospitalized at least once in 1996/97, 1999/2000 and 2004/05. Among long-term users who did not spend time in residential care, 41 percent were admitted to hospital at least once in 1996/97, while 60 percent of those who also had residential care en-

tered hospital at least once that year. For all categories of users of home health services except short-term with no facility days, rates of hospital admissions went up slightly during the study. For non-users, however, the rates went down, from less than 12 percent in 1996/97 to less than 10 percent by 2004/05.



**Figure 50» Mean number of hospital days per hospital patient, by home health service user category and year (age and sex standardized)**

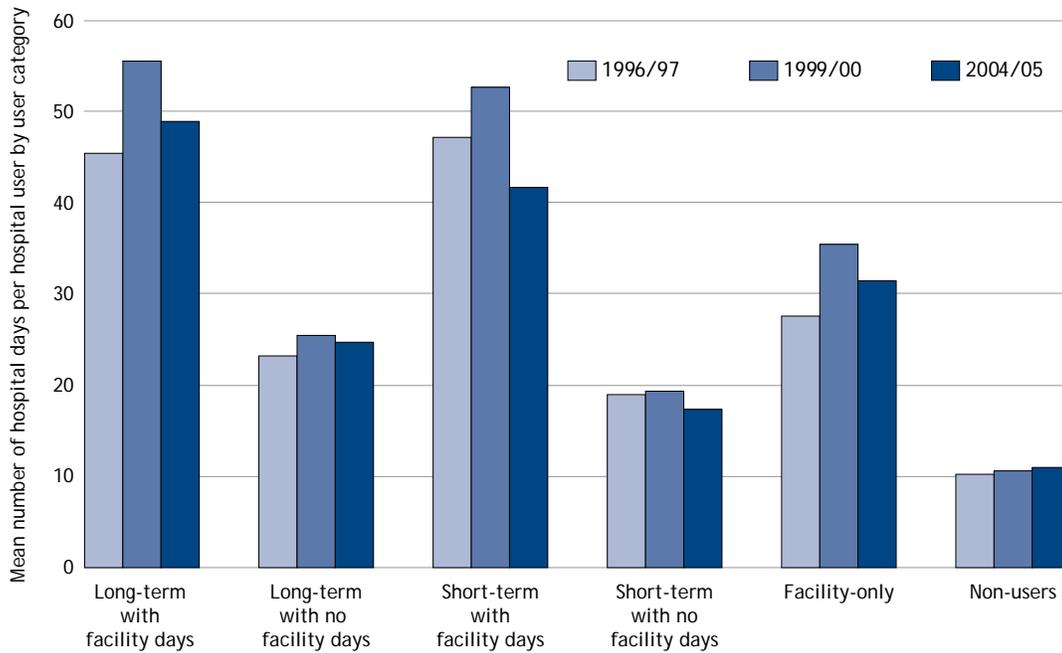
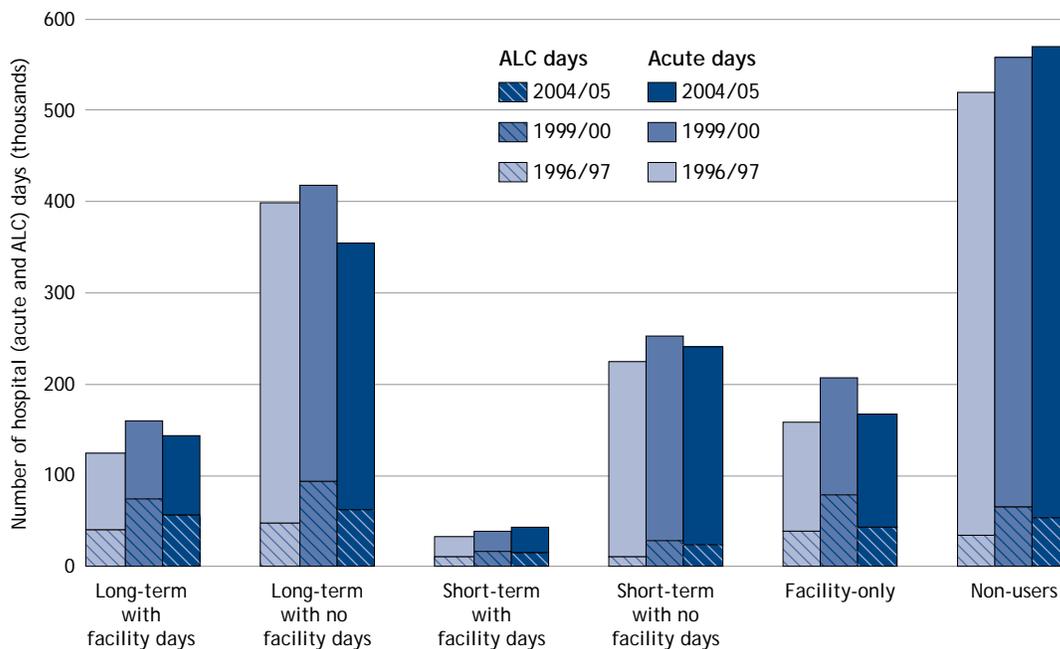


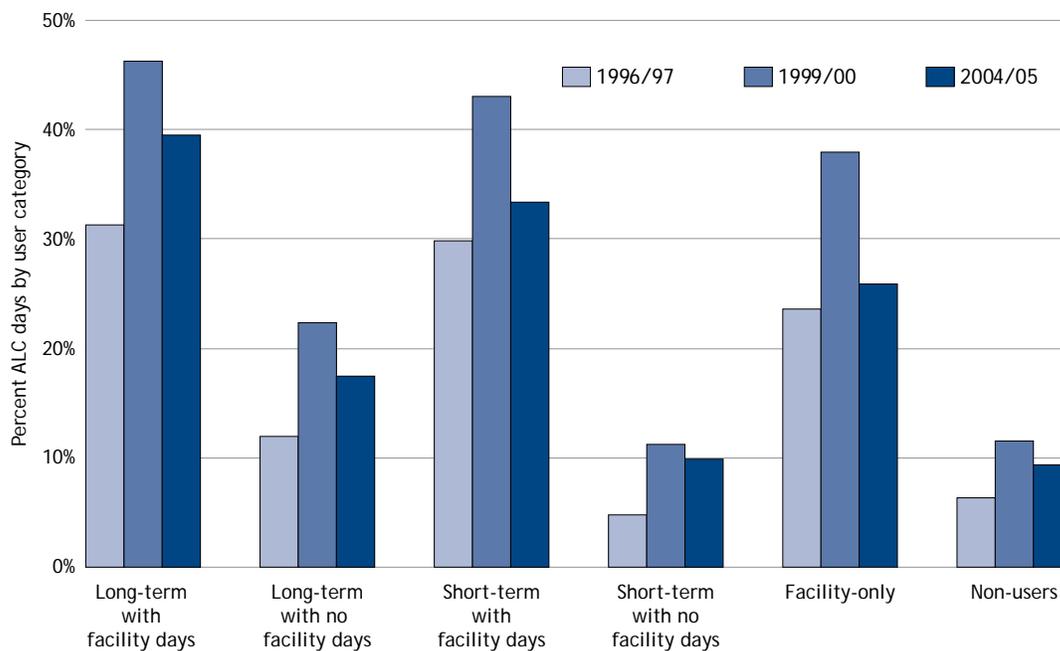
Figure 50 shows the average number of days spent in hospital for those who were hospitalized at least once. In 1996/97, long-term users spent on average 23.2 days in hospital, while long-term users who also spent time in residential care spent on average 45.4 days in hospital, including days classified as Alternate Level Care (ALC). (ALC days are meant to capture days spent in acute care by individuals who require some form of care, but who no longer need to be in an acute care setting.) In 2004/05 these users stayed longer – 24.7 days and 48.9 days, respectively. Non-users of home health services spent on average 10.2 days in hospital in 1996/97 and 10.9 days in 2004/05. The number of days spent in hospital rose slightly in 1999/2000 for each category of home health service user. Overall, short-term users had a slight decline in the number of days spent in hospital.

Figures 51 and 52 show the relationship between acute-care hospital days and ALC hospital days. Long-term users who had no facility days, spent 11.9 percent of their hospital days in ALC in 1996/97, and 17.5 percent in 2004/05. Non-users spent 6.3 percent of their hospital time in ALC in 1996/97 while by 2004/05 that had increased to 9.4 percent days. Clearly, residential care users, whether or not they were also users of home health services, had higher proportions of ALC days compared to both long-term and short-term users of home health services and non-users. Note also that the proportion of ALC days rose in 1999/2000 for all hospitalized patients, including non-users of home health services.

**Figure 51» Number of hospital-acute and Alternate Level Care (ALC) days, by home health service user category and year (age and sex standardized)**



**Figure 52» Proportion of hospital days that were Alternate Level Care days by home health service user category and year (age and sex standardized)**





**Figure 53» Day surgery admissions by home health service user category and year (age and sex standardized)**

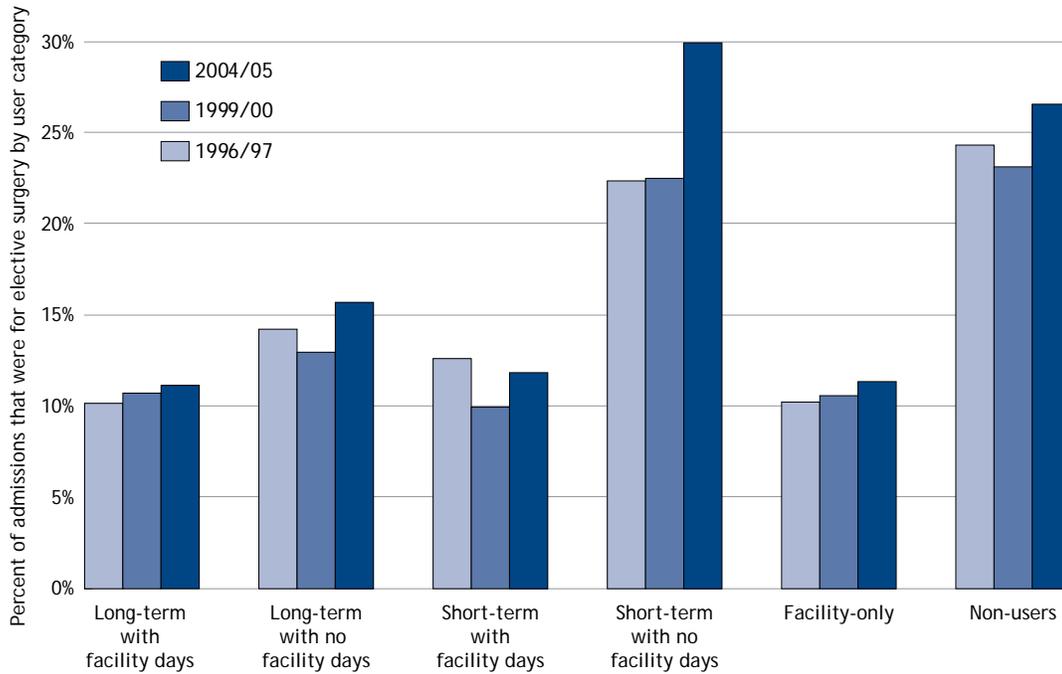


Figure 53 shows day surgery admissions for each category at three moments in time. In 1996/97, 14.5 percent of long-term users of home health services who did not have facility days had day surgery admissions, compared to 11.8 percent of non-users and 22.2 percent of short-term users with no facility days. By 2004/05, 14.8 percent of long-term users, 13.7 percent of non-users, and 22.9 percent of short-term users had day surgery admissions.

Those with facility days, whether or not they also used home health services, had lower rates of day surgery admissions. It is not known what portion of day surgery admissions were for diagnostic purposes or whether increases were due to surgical or diagnostic procedures. The mean number of day surgeries per admitted patient was similar across all user groups and time (data not shown).

## 8. Former Long-term Users of Home Health Services

### CHAPTER SUMMARY

Former long-term users are a substantial and growing group among the elderly, representing nearly 20,000 individuals in 2004/05. They are significantly older, more likely to be female and more likely to be admitted to acute care compared to non-users. This may be a group that could be identified as “frail” or “potentially frail”, and therefore worth tracking.

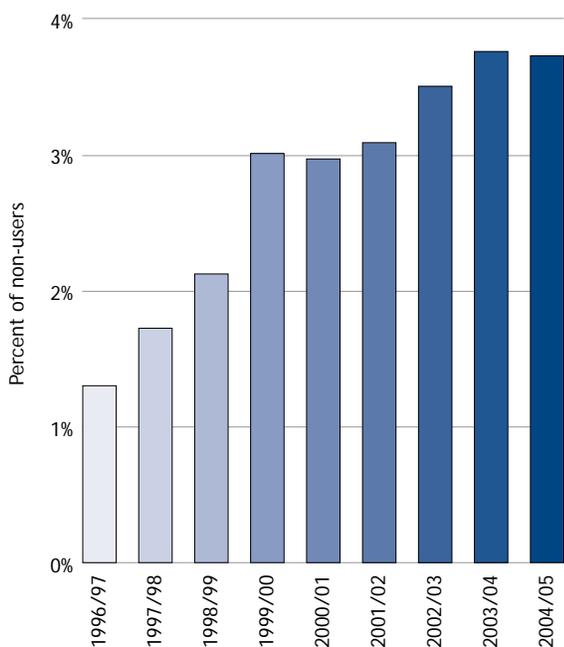
This last section identifies people who were at one time long-term users of home health services, but no longer meet the criteria to be in that group. This group excludes those who have died, have been admitted to residential care, and those who are short-term users of home health services. Though they no longer qualify as long-term users, they may be receiving care that we do not capture in this report. This is meant as an exploratory analysis, in part to test whether this group of users is large enough to warrant future investigations.

The “former long-term user” group is a subset of the “non-user” group in each year, so as we begin to examine this group, Figure 54 shows former users as a portion of that larger group. As expected, the relative size of the

group increases over time. Largely, this is a function of the way we have defined the group; former long-term users in 1997 can only be drawn from people who were long-term users in 1996, while former long-term users in 2000 could have been long-term users in any or all of the years 1996 through 1999. This is a substantial group in size, representing nearly 20,000 individuals in 2004.

The likelihood of being a former long-term user increases substantially with age, and is greater for females than for males. Figure 55 shows that in 2004/05 more than one in five seniors aged 90 plus were at one time long-term home health users but are no longer so (but are alive, living in the community, and not short-term users).

**Figure 54» Former long-term users as percentage of non-users of home health services over time**



**Figure 55» Former long-term users as percentage of non-users of home health services by age group, sex and year**

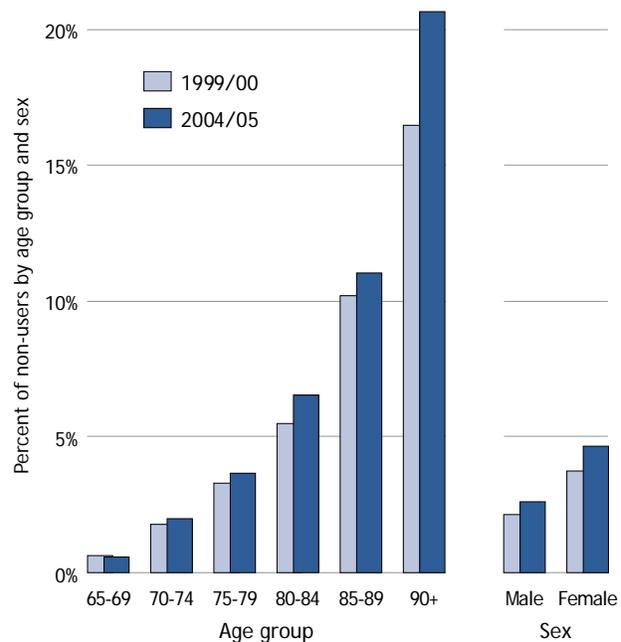
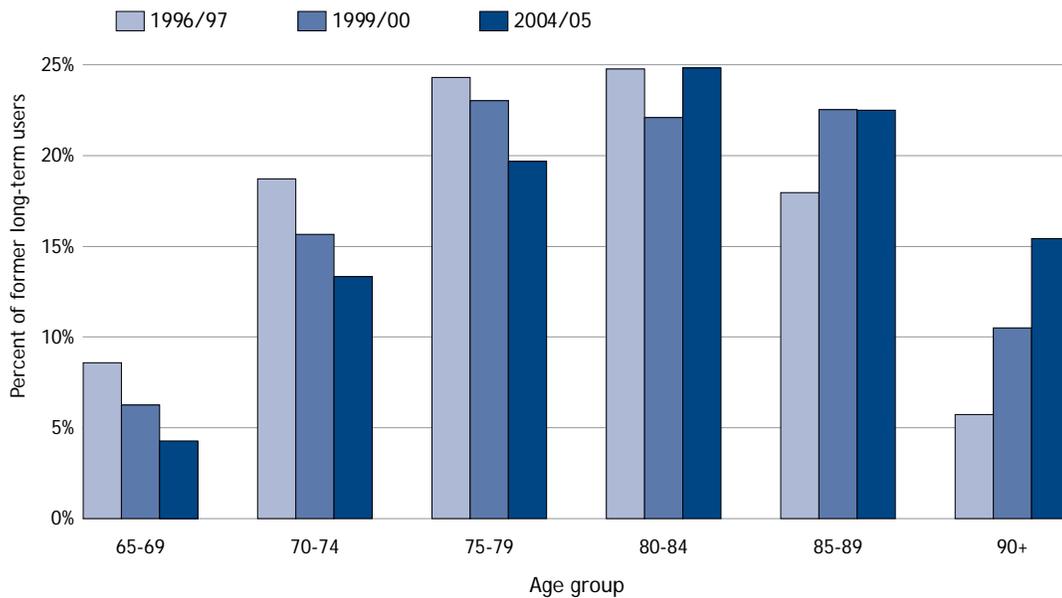




Figure 56 provides a different perspective, showing the age distribution of the former long-term user group. This graph indicates that the group is aging, perhaps in part because the long-term users are aging as well.

Figure 57 shows that the former long-term user group is heavily skewed toward individuals who are from areas with lower than average neighbourhood income. This is perhaps as expected, since lower income neighbourhoods experienced a greater decline over time in the likelihood of being a long-term user.

**Figure 56» Former long-term users of home health services, by age group and year**



**Figure 57» Former long-term users of home health services, by neighbourhood income decile and year**

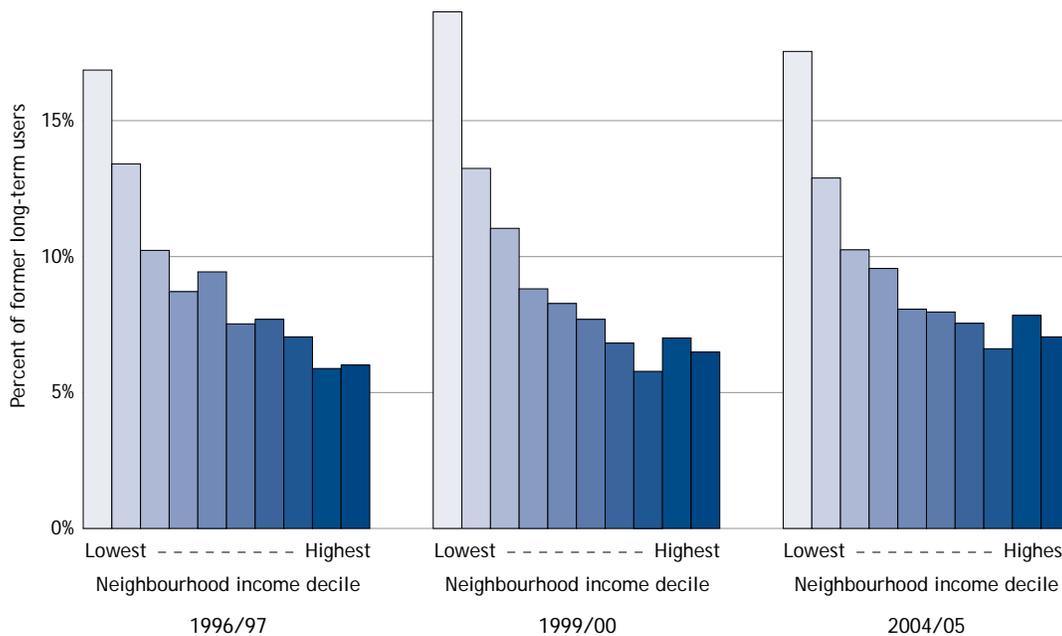
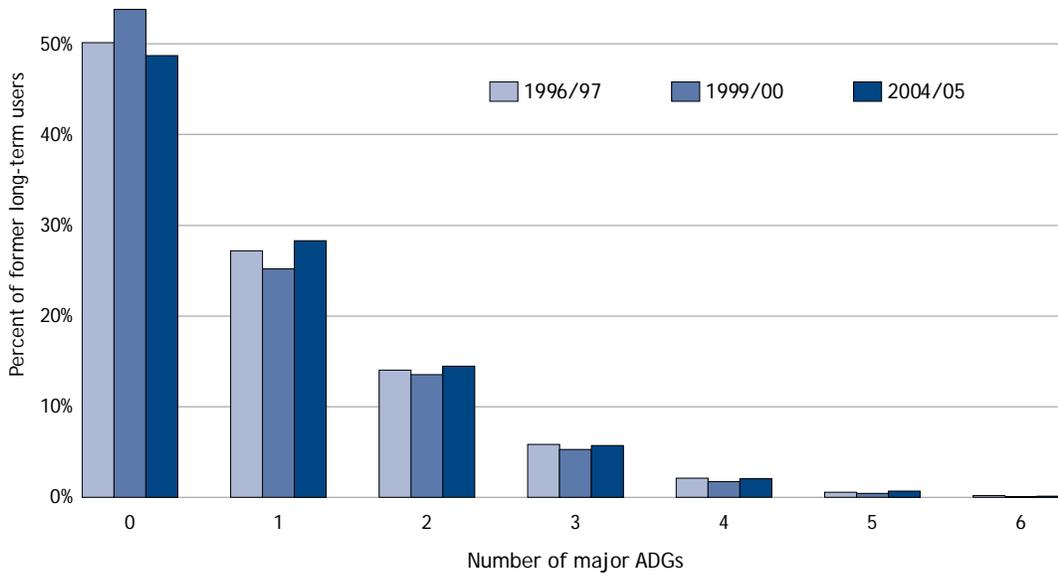


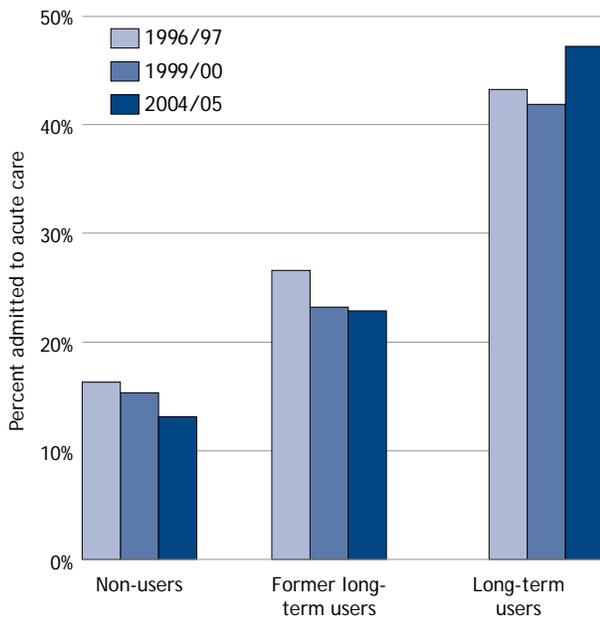
Figure 58 shows the distribution of former long-term users by the number of their major diagnoses (ADGs). Half of former long-term users have no major diagnoses, and another quarter or more have only one major diagnosis.

This group thus seems to be dominated by individuals with lower levels of morbidity, at least when measured by major diagnoses.

**Figure 58» Former long-term users of home health services, by number of major ADGs and year**



**Figure 59» Likelihood of acute care hospital admission by former long-term users, current long-term users and non-users and year**



Finally, Figure 59 shows that the likelihood of admission to acute care is higher in all years among former long-term users compared to non-users. In 2004/05, for example, about 23 percent of former long-term users were admitted to acute care, compared to 13 percent of non-users. However, this rate of admission is far lower than that of current long-term users, of whom nearly half (47 percent in 2004/05) were admitted to hospital during the year. This suggests that former long-term users are healthier, on average, than current long-term but by no means as healthy as the average non-user.



## 9. Discussion and Conclusions

The decade from 1994/95 to 2004/05 was one of substantial policy change for home health services in BC. This began with the elimination of housekeeping as a stand-alone service in the 1990s. Many health entities (at that time there were 21) chose to delay implementing that policy as long as their budgets allowed. In 1999 the Ministry reiterated this policy, stating that services should be concentrated on clients with the highest risk and greatest needs. Guidelines had been issued on amounts of care to be provided, but the Ministry clarified that these were not hard maximums and that health authorities were able to use their discretion in allocation of services.

More changes occurred in 2002, with the implementation of criteria that shifted eligibility for residential care to focus on more timely access for those with complex care needs and highest urgency. The intent was also to expand the range and options of service available to maintain people in their own homes, including the provision of assisted living and supportive housing arrangements.

There was an explicit goal of decreasing the use of acute inpatient hospital care, by avoiding admissions, shortening inpatient stays and increasing community-based services where they were needed. These changes imply potential alterations in both the mix of health care services available, as well as the mix of individuals to whom they were provided. At the same time, the Ministry acknowledged that home health services and residential care had a “pivotal role in developing a sustainable health care system”, and stated a goal of increasing the number of people served by home health services relative to residential care.

This report describes how home health services were used by BC seniors within this environment of substantial policy change. It compares individuals who have and have not accessed publicly-funded home health services. Many changes occurred over this time, and we offer the following as a summary of some of the most important to long-term users of home health services.

### Fewer seniors receive home health services

In 2004/05, nine percent of British Columbians aged 65 and over received publicly-funded home health services at some time during the year, compared to 13 percent in 1994/95, a 30 percent drop. It is also important to recognize that this marked decline in the total number of seniors who received home health services occurred at a time when the senior population in BC grew by 20 percent (from 510,369 to 614,571). This decrease is a major one. The nine percent of seniors using home health services compares with the rest of Canada, where 11 percent of seniors (in 2003) used publicly-funded home health services. Yet policy changes might have been expected to produce the opposite result, given the growing interest in home health services as an alternative to acute and residential care.

Most of the decreases in use of home health services occurred among seniors who were long-term users of the home health services sector. The proportion of seniors receiving long-term home health services decreased from 10 percent to six percent between 1995/96 and 2004/05.

There are some limitations to these analyses. Using descriptive data alone, we cannot determine that the right services were provided to the right people prior to these declines. In addition, more recent data are missing information (such as case-management) that could round out our understanding of what services people are receiving. Nonetheless, on the face of it, declines in use do not seem consistent with what one might expect given changes in other parts of the health care system: an increasing emphasis on retaining people in their homes, an ongoing interest in maintaining health status and preventing declines among the elderly, and a stated policy of wanting to increase the use of home health services relative to residential care.

## Over time, the typical long-term user is a woman who becomes both older and more medically frail

Over the ten-year study period, the demographic profile of long-term home health service users has changed.

Women continue to account for the largest share of BC seniors who use long-term home health services. Women's portion grew with increasing age, decreasing income, and increasing number of major chronic diseases.

Over time, long-term users became older and less well, that is, they had increasing morbidity. This means that the decreases in use were concentrated among the younger elderly and those with lower levels of morbidity. Despite this, people with many major diagnoses were slightly less likely to be long-term users in 2004/05 compared to 1995/96. In both years there were many seniors with multiple major diagnoses who received no publicly-funded home health services captured in the data used here. These are the most obvious potential future users.

## Variations in long-term home health service use by neighbourhood income and region narrow over time

Over time, the regional differences in use of long-term home health care services narrowed somewhat with use in the north now closer to that in the south, consistent with the policy objective of applying consistent criteria for eligibility for public services across the province. Nevertheless, even in 2004/05 the proportion of seniors in Northeast Health Service Delivery Area using long-term home health services was nearly double the proportion in Fraser South Health Service Delivery Area.

Over the same period, the neighbourhood income-related disparity in use of long-term home health services also narrowed. There was less use for all income groups, but the decline was greatest among those in the lower income groups. Adjusting for health status did not change this result. This trend, along with increasing average age of

long-term users, suggests that some of the most socially vulnerable people – older female seniors with lower incomes – were most likely to feel the effects of policy and service changes.

## Over time, long-term home health service clients use more home care and less home support

Compared to a decade earlier, a greater proportion of long-term home health users in 2004/05 received home care nursing, physiotherapy, occupational therapy and Adult Day Program services, and a lower proportion received home support services. The average intensity of these therapy services decreased over time, while average intensity increased for home support. This suggests that long-term home health services play a more clinical or teaching role today than a decade ago. This change may have been predicted among short-term users, but it suggests, again, less focus on the maintenance and preventive functions of home health services, such as housekeeping and meal preparation among long-term users.

## Long-term home health service clients use more physician and hospital services

More BC seniors saw family doctors, and more received diagnostic tests in 2004/05 than a decade earlier. This trend is even more striking among long-term home health service clients. This suggests more intense care management of long-term home health services, perhaps driven in part by the increasing morbidity of the population receiving these services. It also raises of question of how or whether care from family physicians and home health services are coordinated.

Long-term users use more acute hospital services as well, indicating that the home health service system is indeed identifying individuals who are medically frail. Given this, there may be opportunities for activities or interventions to prevent hospitalization, including full service primary care and chronic care management



## The most likely long-term user of home health services, 1995/96 and 2004/05

In 1995/96 the most likely long-term user of home health services was a woman between the ages of 80 and 84. Her overall likelihood of being a long-term user was one in six (17.9%) – but this varied depending on her income. The most likely non-user of home health services was a woman between the ages of 65 and 74.

In 2004/05 the most likely long-term user of home health services was a woman between the ages of 85 and 89. Her likelihood of being a long-term user was one in six (15.4%). The most likely non-user of home health services was still a woman between the ages of 65 and 74.

### Changes to long-term home health clients' use of specific services

|  | 1995/96        |            | 2004/05        |             |
|--|----------------|------------|----------------|-------------|
|  | Long-term user | Non-user   | Long-term user | Non-user    |
| Home nursing                           | 22%            |            | 29%            |             |
| Amount of home nursing                 | 36 visits      |            | 31 visits      |             |
| Physiotherapy                          | 11%            |            | 20%            |             |
| Amount of physiotherapy                | 11 visits      |            | 6-7 visits     |             |
| Occupational therapy                   | 11%            |            | 20%            |             |
| Amount of occupational therapy         | 6 visits       |            | 4-5 visits     |             |
| Adult Day Program                      | 9%             |            | 15%            |             |
| Amount of Adult Day Program            | 8.5 visits     |            | 9.3 visits     |             |
| Home support                           | 84%            |            | 70%            |             |
| Amount of home support                 | 151 hours      |            | 207 hours      |             |
| Hospitalization                        | 41%            | 12%        | 45%            | 10%         |
| Number of days                         | 23 days        | 10 days    | 25 days        | 11 days     |
| Alternate Level of Care                | 12%            | 6%         | 18%            | 9%          |
| Number of GP visits                    | 14 visits      | 8 visits   | 18 visits      | 9-10 visits |
| Medical specialist visits              | 62%            | 39%        | 65%            | 40%         |
| Number of medical specialist visits    | 6 visits       | 4 visits   | 8 visits       | 4 visits    |
| Surgical specialist visits             | 60%            | 48%        | 58%            | 47%         |
| Number of surgical specialist visits   | 4-5 visits     | 3-4 visits | 4-5 visits     | 3-4 visits  |
| Diagnostic specialist visits           | 83%            | 69%        | 89%            | 77%         |
| Number of diagnostic specialist visits | 7 visits       | 4-5 visits | 10 visits      | 5-6 visits  |

*Note: % = clients using given service / total long-term clients*

(with both of those including integrated home health services). The trend to use “alternate level of care” (ALC) days is encouraging, with increases between 1994/95 and 1999/2000 and then declines to 2004/05 (though 2004/05 remains higher than 1994/95). Alternate Level of Care days remain a relatively high proportion of all hospital days, particularly among the groups that use residential care facilities during the year.

### Former long-term users are different from non-users

The group identified as former long-term users has become older over time. This group is dominated by people with fewer major chronic diseases than current long-term users, but some do have multiple major diagnoses. Lower income groups are also more heavily represented in this group, as might be expected given the trends described above. Admission to inpatient acute care is higher among former long-term users compared to non-users, but is still much lower than among current long-term users. This suggests that individuals no longer receiving services are less medically frail than those using services, but more frail than non-users. Former long-term users may deserve more attention, both in terms of research and in follow-up and monitoring by Health Authorities (and in some cases it may be precisely this group that is receiving case management services that are not part of the data analysed for this report).

### Data limitations

There are several limitations to these analyses. First, the health status measure used here (ACG major diagnoses) is designed to capture medical rather than functional frailty. While medical and functional frailty may overlap to a large extent among older populations, they remain different concepts.

Second, the analyses did not include all publicly-funded health care services provided through this sector. For example, palliative and convalescent services and case management were not included in these analyses. The latter

were not included because the data are not routinely or consistently provided to the Ministry of Health Services. This will remain a challenge in future analyses of service use, and it does have an impact on any ability to make firm statements on how many people are “connected with” the home and community care sector in BC.

Third, data are also limited on short-term users who receive services following an acute inpatient hospitalization. As above, this will remain a data gap because of the way data are collected and reported to the Ministry of Health Services. This gap is less an issue in the present report, since the focus here was on the long-term users.

### Future research

Starting in 2005, the Ministry of Health Services mandated the use of the interRAI Home Care Assessment Instrument for long-term home health clients. This tool has been designed by an international non-profit organization specifically to measure functional, cognitive and medical impairment, and to provide standardized measures to guide care planning. Analyses comparing the case-mix adjustment system used in this report (ACG) with interRAI would shed light on the similarities and differences between them. Ongoing use of the ACG system is desirable because it allows comparisons between users and non-users, but those comparisons would benefit from validation. And perhaps more importantly, it may be possible to identify and use the advantages of these two data systems together to more fully understand client needs and outcomes.

Future research might also incorporate other information, such as the BC PharmaNet data, which captures all prescriptions for the population. Pharmaceutical use can offer important information about chronic diseases, their treatment over time and polypharmacy.

In 2004/05, publicly-funded assisted living beds began to become more available in BC, and have been increasing in number since. This is an important addition to



the menu of service options available to seniors, and was intended, along with subsidized seniors' housing, to add to the number of options between residential care and seniors continuing to live in their own homes. An updated analysis including data on assisted living (which was not available for our purposes) would be beneficial.

Future research might consider the drivers of regional variations, in particular whether income, demographics, morbidity or other factors drive those differences. The use of particular home health services like occupational therapy and home support may also deserve further analyses, as there were large changes in the way these services were delivered over time.

Finally, it is important to maintain a population-based perspective in future analyses, and it would be useful to expand the focus beyond services delivered by the health care system. Declines in formal publicly-funded care provided to seniors might mean that people are experiencing unmet needs. It also may be the case that other services are expanding to fill in the gaps – other health care services or services outside the health care system. Future research might be able to shed some additional light on this.

## **Concluding comments**

Seniors receive a complex mix of services, and this mix appears to be changing over time. Publicly-funded care is increasingly concentrated among individuals who are older and have greater morbidity, which is consistent with policy. At the same time and bearing in mind the limitations of the data used in this report, the decline between 1995/96 and 2004/05 in the proportion of seniors receiving publicly-funded services appears inconsistent with the broad policy objective of providing more community-based care. A better understanding of the range of services both in the public and private sectors, how they currently interact, and how those interactions could be improved, are clear directions for future work.

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## APPENDIX I

# Glossary of Terms

### *Adult Day Centres*

Adult day centres offer health, social and recreational and activities for disabled people in the community. People attend these centres approximately once a week to have baths, meals, attend a diversity of activities, and receive a health assessment and monitoring. There are general-purpose centres and specialized ones (e.g. for persons with Alzheimer's).

### *Assisted Living*

A form of housing appropriate for seniors, with hospital-ity services and personal assistance such as for mobility, bathing and monitoring medications. Assisted living is for people who need daily personal support and are cognitively able to direct their own lives. Assisted living falls under the Community Care and Assisted Living Act in BC and is defined as premises or part of a premises in which at least one but no more than two prescribed (personal care) services are provided. In 2004/05 in BC about 1,400 seniors were subsidized in assisted living units. In 2006, funding was approved for an additional 550 assisted living units to be built over the next 13 years (7).

### *Community Care and Assisted Living Act*

Replaced the Community Care Facility Act and provides for an assisted living registrar to uphold the regulatory system for assisted living residents in BC.

### *Continuing Care*

Care over an extended period of time.

### *Choice in Supports for Independent Living (CSIL)*

An alternative for eligible home support clients, intended to give people with daily personal care needs more flexibility in managing their home support services. CSIL is a "self-managed model of care". Clients receive funds directly for the purchase of home support services. They assume full responsibility for the management, co-ordination and financial accountability of their services, including recruiting, hiring, training, scheduling and supervising home support workers.

### *Direct Care*

A range of direct professional health care services, such as home care nursing and community rehabilitation services.

### *Functional Disability*

An impairment of the ability to perform activities related to the functions of daily living (i.e., speech, movement).

### *Home and Community Care*

A range of health care and support services for eligible residents with a frailty or with acute, chronic, rehabilitative, or palliative health care needs. The type of assistance and support required will vary from one person to another, and the amount of service necessary may change over time. Home and community care services can be provided on a short- or long-term basis. Home and community care services are based on need and, depending on the service, may be subsidized according to income or provided at no cost to the client. The objective of these programs is to maintain, restore or improve the health and functioning of disabled people. In-home services, for eligible clients, include home care nursing, rehabilitation, home support and palliative care. Community-based services include adult day programs, meal programs, as well as assisted living, residential care services and hospice care. An assessment and case management system determines eligibility, the preferred service arrangement, monitors the ongoing care and authorizes necessary adjustments.

### *Home Care*

See home and community care.

### *Home Care Nurse*

A registered nurse providing direct nursing care in the home.

### *Home Health Services*

See home and community care.

### ***Home Support***

Assistance to clients to continue living in their own homes. The services include personal assistance (bathing, dressing, grooming, preparing meals, etc.), housekeeping when appropriate (when the client is in need of personal care services) and delegated nursing tasks such as medication management. There are both government home support and private pay home support agencies.

### ***Independent (or Supportive) Housing***

A form of housing appropriate to the elderly with hospitality services e.g. one meal a day, limited housekeeping and laundry. Some supportive housing may offer personal assistance but in the majority of instances, personal support will be arranged by the tenant accessing outside home support service agencies. Independent (supportive) housing is mainly for persons who are still able to maintain an independent life but need or want some support from others (personal care).

### ***Needs Based Access***

Access to facility care is now restricted to those individuals assessed as complex care, which means people who present immediate need for continuous nursing coverage for complex conditions associated with high degrees of physical and cognitive disabilities.

### ***Primary Care***

Primary care means first point of contact with the health system. For most people this means visiting individual doctors or other health professionals.

### ***Residential Care***

Residences for people with high degrees of physical and/or cognitive disabilities and complex conditions requiring 24-hour supervision and continuous on-site professional (nursing) care. Residents are usually not able to direct their own care. Residential care also falls under the Community Care and Assisted Living Act in BC. Since 2002 only people with complex care needs qualify for residential care.

### ***Respite Care***

A short stay in a residential care facility by a frail elderly person living in the community. This short stay allows for a period of relief for caregivers.



## APPENDIX II

# Methods

This appendix provides more detail on the variables used and analytic decisions made in the course of analysis. Further detail is available from the authors on request.

- Use of all types of home health service were analysed separately using arrays that recorded whether a person had an open record indicating service use on each day of the study.
- These separate arrays were collapsed to create an overall pattern of interaction with home health services on each day of the study.
- Home health service days were calculated from the continuing care data available from the BC Ministry of Health Services (home health service was operationalized as all non-LTC facility records where the provider category on LTC Care Advice records was M,N,O,Q).
- Residential facility days were calculated from the LTC Care Advice based on provider category equal to A-K. LTC facility respite care (identified using regular facility stay=100 on the service type variable, LTC Care Advice file) was not included in calculating LTC facility days for the user array.
- Respite days were excluded when counting the use of residential care facilities, as they are a service that is available in an effort to maintain people in their own homes.
- If more than one type of home health service was recorded for the same day, in the composite array the day was counted as one home health service day only. In other words, if an individual receives both home support and home nursing over the same time period, the days of care are not double-counted.
- If any residential days and home health service days overlapped, the residential trumped home health (i.e. the day was counted as residential). This was done based on the assumption that the residential care records are likely accurate, while home-based service records may remain open for some time after people are admitted to residential care.
- Home health service was considered continuous if records were separated for fewer than two days. If the records were separated by fewer than two days, they were tied together in continuous days calculations. This was done to avoid slightly inaccurate record-keeping from counting people in the appropriate user group.
- If more than ninety days of continuous home health service was reached, the person was counted as a long-term user from the ninetieth day onwards. Services used prior to day 90 of the period were attached to day 90, and were then only counted in the year the person became a long-term user. Days 1-89 were recoded in the array as 'non-user' status, for the purposes of calculating descriptive statistics by fiscal year. This was done to deal with situations where people use services across fiscal years, and only qualify as long-term users by adding those days together. The approach described allows us to count the individual as a long-term user, but also ensures that if he/she qualifies only by adding days in different fiscal years, that he/she is counted as a long-term user in only one of those years.
- If a person received fewer than ninety days of continuous home health service, they were counted each day as a short-term user.
- For the first study year, we calculated the number of days of home health service received in the ninety days prior to the study start date. This was done to estimate correctly the number of long-term users in year 1, using a 'run-in' from year 0.
- Similarly, for the last study year, we used a 'run-out' of 90 days into the following year.

## APPENDIX III

# Search Strategy

### Search strategy for the literature review

The literature review was prepared to provide background on the use of home health services in Canada, on trends in the use of home health services, in types of use over time, and in particular on the relationship between the use of home health services and the health care system over time. We were especially interested in studies investigating the relationship between the use of home health services and the use of other health care services and in studies that used administrative data.

The first set of articles we reviewed was obtained through a literature search conducted by the College of Physicians and Surgeons of BC. The search terms used to identify studies for this report were: home care services/utilization AND health services for the aged/utilization.

Results were limited to English, Human, Aged and 1997-2006.

This search yielded 165 references. From these 165 references we reviewed the citations and abstracts, selected the most relevant studies and obtained copies of the full articles. We then checked the bibliographies of these studies to identify additional relevant studies and reports – additional studies and policy papers were identified through a ‘snowball’ method. As well, we checked provincial and federal government websites for publications and information on home care/home health services and home and community care services.

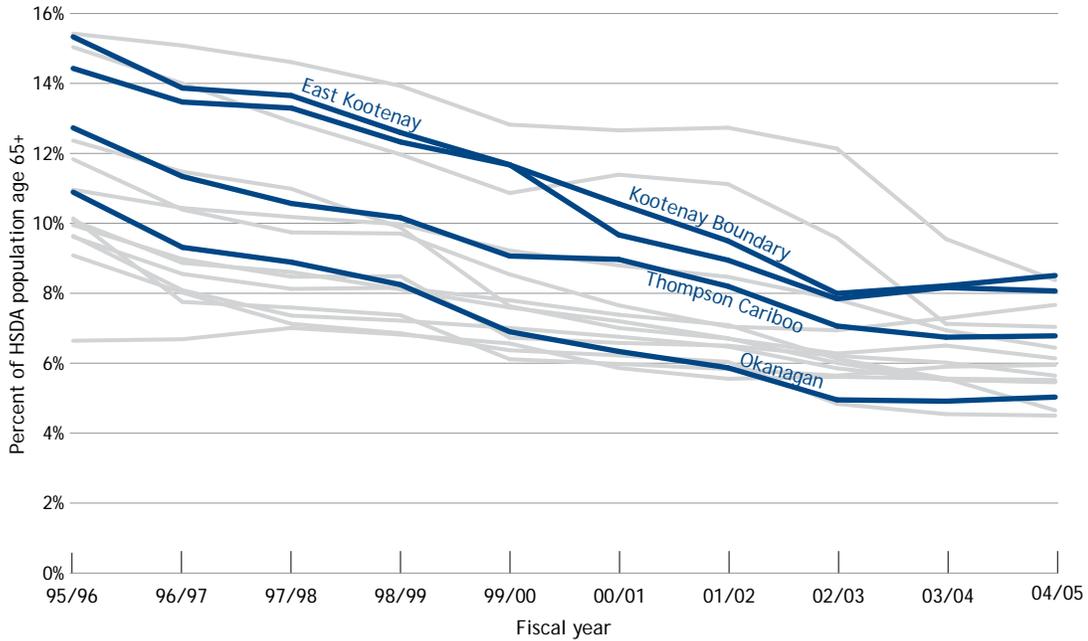


APPENDIX IV

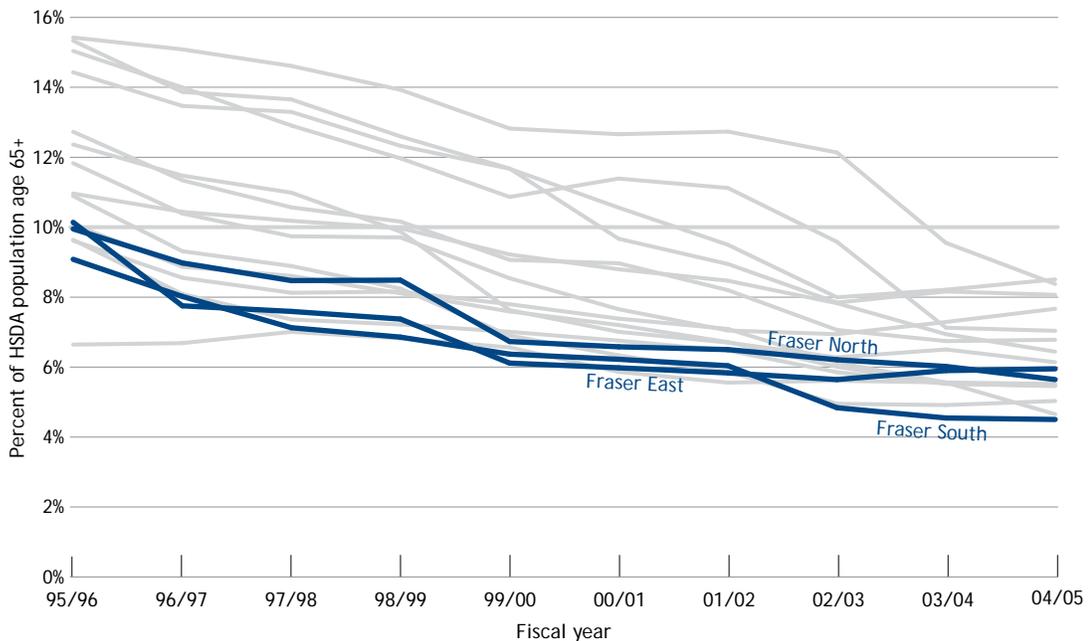
# Regional Results

## Trends in likelihood of long-term home health service use, for Health Service Delivery Areas by Health Authority

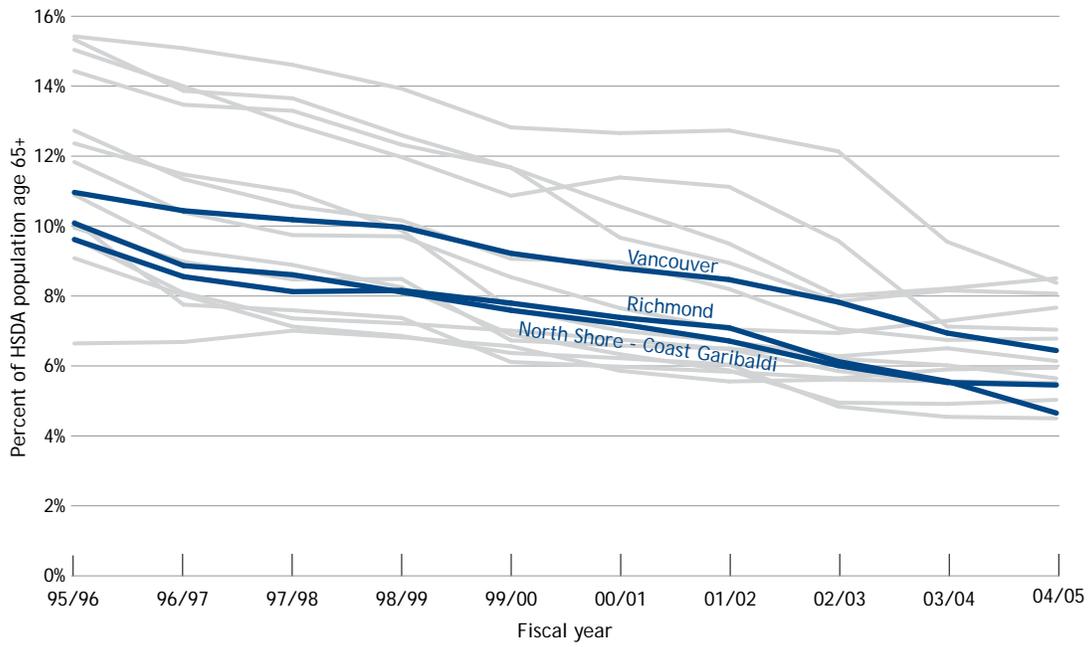
### Interior Health Authority



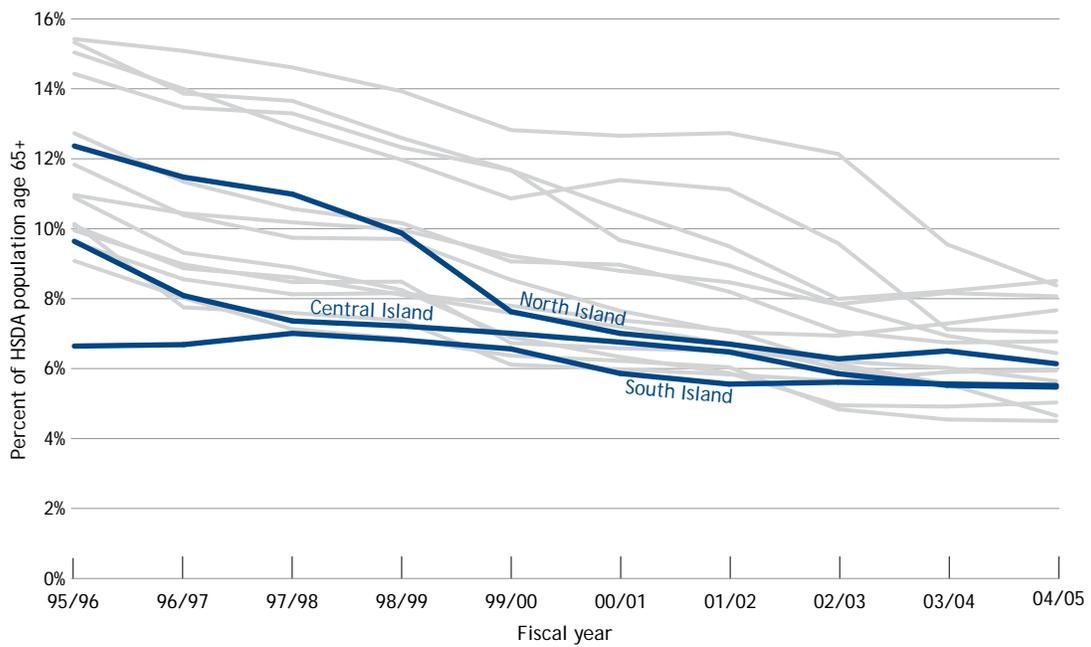
### Fraser Health Authority



### Vancouver Coastal Health Authority

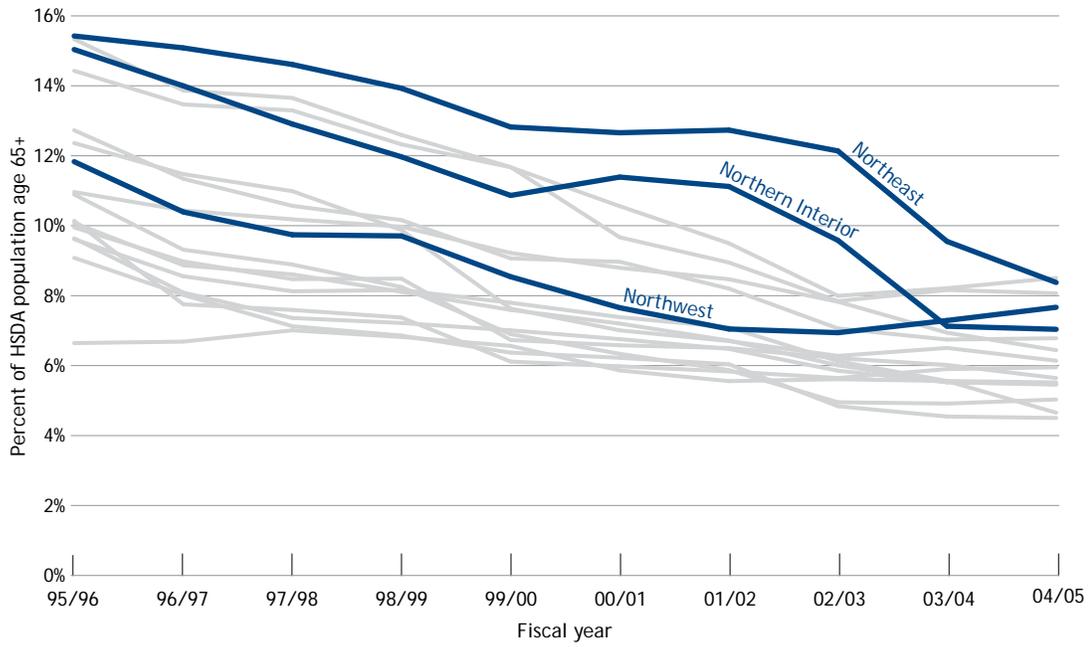


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