



A pan-Canadian perspective on institutional long-term care

Whitney Berta^{a,*}, Audrey Laporte^b, Dara Zarnett^b,
Vivian Valdmanis^c, Geoffrey Anderson^b

^a *Department of Health Policy, Management and Evaluation, Faculty of Medicine,
University of Toronto, 155 College Street, Suite 425, Toronto, Ont. M5T 1M6, Canada*

^b *Department of Health Policy, Management and Evaluation, Faculty of Medicine, University of Toronto, Canada*

^c *Health Policy Program, University of the Sciences in Philadelphia, USA*

Abstract

We aggregate long-term care (LTC) facility-level data collected by Statistics Canada to National and regional levels to make observations relating to environmental characteristics – including the age distribution by region, and market share by type of ownership – and organizational characteristics – including ownership, facility size, resident age distribution, and the types of care provided in facilities by ownership. We observe significant differences in ownership by region, in facility size by ownership, and in levels of resident care provided by ownership. Further, we examine some of the classic proxies for quality of care for the LTC sector in this paper, including a variety of staffing intensity levels, observing significant differences in staffing intensities by region. We hope that our observations prompt researchers and policy makers to question the desirability and implications of this variation in the Canadian LTC industry.

© 2005 Elsevier Ireland Ltd. All rights reserved.

Keywords: Long-term care; Nursing homes; Staffing levels; National policy on long-term care

1. Introduction

While debates on the cost-quality conundrum in long-term care (LTC) have raged in the United States for decades [1], in Canada this debate is in its infancy—at least in terms of being elevated to a national issue. To some extent the debate has been hampered by enormous cross-province variation that has evolved over the past 150 years within the LTC industry in Canada. In Canada, health care is, and has histor-

ically been, managed provincially. With respect to LTC, this has led to regional variation with respect to the mix of public and private funding, facility ownership, costs to residents for basic accommodation, the proportion of out-of-pocket costs borne by residents, residency requirements, minimum comfort allowances, and the availability of home and community services that can sustain potential residents for longer periods in their homes prior to institutionalisation [2]. What is common across Canadian jurisdictions is that facility-based LTC is not a publicly insured service under the *Canada Health Act*, and LTC is not fully insured in any jurisdiction.

* Corresponding author. Tel.: +1 416 946 5223;
fax: +1 416 978 7350.

E-mail address: whit.bera@utoronto.ca (W. Berta).

With a purported crisis in healthcare now close at hand, and healthcare policy at the top of the political agenda in Canada, we suggest that the time is ripe to consider what can be gained through the development of national level LTC policy that considers both cost and quality. We are concerned that, at this pivotal time, policy around nature and quality of LTC care for the future is virtually absent from the political agenda, while expressions of concern over spending and cost containment in this sector are profuse.

In an effort to initiate a discussion of the feasibility and significance of developing a national level LTC policy, we present a “pan-Canadian” [3] descriptive analysis of the LTC industry using longitudinal data collected by Statistics Canada through the Residential Care Facilities Survey (RCFS) from LTC facilities operating over the interval 1996–2001. We aggregate facility-level data to National and five “regional” [4] levels and make observations relating to environmental characteristics – including the age distribution by region, and market share by type of ownership – and organizational characteristics – including ownership, facility size, resident age distribution, and the types of care provided in facilities by ownership. In prior studies conducted in the U.S. and elsewhere, all of these characteristics have been shown to impact some aspect of organizational performance in LTC [5,6]. Further, we examine some of the classic proxies for quality of care for the LTC sector in this paper, including a variety of staffing intensity levels. Direct care staff intensity levels and nursing staff intensity levels – typically defined as hours of care by staff type per resident day – have been examined in other studies of LTC in settings outside of Canada and linked to health deficiencies [7]. We observe extensive variation among these environmental and organizational characteristics across select regions in Canada, which suggests that further research is necessary to appreciate what the region-specific implications are for quality of LTC, access to LTC, and the costs of LTC to residents.

2. Canadians’ “understandable obsession” with the baby boom cohort

In the LTC industry in North America and elsewhere, “the goal of containing the growth of public

expenditures for long-term care . . . is high on the agenda of . . . policymakers, because such expenditures have been increasing in recent years” [8]. Certainly, this concern is felt by those who experience, and those who influence long-term health care policies in Canada. The estimated total spending on the LTC sector accounts for 1.25% of GDP (2000) in Canada: the majority, 1.0%, of this is public spending (tax financing) for LTC, while 0.25% is private spending on resident fees [9]. As baby boomers enter late life, the number of individuals in Canada over the age of 65 will increase from 18.5% of the working-age population in 2001 to 33.6% in 2026 and 41.0% in 2040 [10]. By the year 2051, seniors will constitute almost 30% of the entire Canadian population [11]. Similar phenomena are anticipated in the United States and in Europe, although the senior cohort “bulge” is not compressed over the same short timeframe in Europe as compared to North America [12,13].

These demographic trends have led researchers to make predictions about future demands on the U.S. and Canadian health care system ranging from the apocalyptic to the phlegmatic, and have fomented concern among health policy makers. Older North Americans are major users of health and social services, and their increasing numbers over the next 25 years have led some researchers to predict unprecedented fiscal and social pressure on the health care industry. On the other hand, other researchers [14,10] stress that a simple extrapolation of prior demographic and health services usage data is likely to lead to exaggerated system cost projections. Researchers in the field of aging suggest that the impact of the aging baby boomers on health expenditures will be mitigated by their overall better health as compared to past cohorts. In addition, they suggest that health care expenditures might be moderated with the availability of less costly care alternatives [8,15] such as expanded home care services and through as-yet-unrealized service efficiencies brought about by future technological innovations. Despite the less dire future-picture painted by these latter observations – or perhaps *because* of the contrast to the demographic data that they address – uncertainty around the system-wide impacts of baby boomers prevails as one of the dominant themes in the LTC industry sector in Canada. Despite our genuinely poor understanding of the relationships between resource allocations and related expenditures, efficiency, and the impacts these

have on the quality of care residents receive, calls persist for LTC reform with a focus on cost control and the more “efficient” use of resources [16]. While a better understanding of the cost-quality conundrum has been identified as a critical activity toward improving the effectiveness and efficiency of the LTC industry [17,11] calls for reform have compelled action before study in Canada. Further, calls for reform in LTC have been simultaneous with calls for reform in other health care sectors. In the acute care sector, reform has generally involved hospital downsizing and/or the rationalizing of beds previously dedicated to the provision of long-term care and so have impacted the LTC sector—in some instances frustrating LTC reform efforts [18].

Canada is comprised of 10 provinces and 3 territories. In Canada, LTC programs are generally delivered via two distinct channels: communities and facilities. Community services for the elderly include visiting nursing, therapy, in-home services, and various support services designed to sustain individuals in their homes adequately and safely. LTC facilities generally provide a lower level of care than that offered in hospitals, however some overlap exists. Individuals residing in long-term care facilities in Canada are those in need of high levels of daily personal care entailing supervision or assistance with activities of daily living, 24 h nursing care or supervision, and a secure environment. Funding for LTC comes from the federal government which supplies block funding to provinces and territories for health care sectors, including LTC. While responsibility for system design, funding, policies and regulatory compliance lies with the provincial ministries of health, the responsibility for the program development and delivery of LTC services has devolved to regional health authorities in most provinces. While provincial regulations govern the personnel and financial authority of health services organizations, these regulations differ by province. As a consequence, the nature, level and availability of health care services, including institutional LTC varies from jurisdiction to jurisdiction.

Beyond system-structural differences, Canadian provinces differ markedly in terms of geographic area and population density. Certainly, these characteristics must influence the specificity of jurisdiction-level policy and planning, and contribute to greater regional disparity in terms of LTC service characteristics, availability and accessibility. Regional disparities are of

concern to some policy analysts [2] and researchers on aging [12] because they have precipitated many structural differences in the marketplaces that we highlight in this paper, including differences in public–private mix, mean facility size, and operational differences including charges for accommodation (differing by a magnitude of six across the nation) and comfort allowances for personal expenditures (differing by a magnitude of three across the nation). Further, regional differences sustain inequities in terms of access and costs, and are suspected of sustaining inequities in care quality.

In this paper, we aggregate province-level data across five “regions”: data for the provinces of *British Columbia* and *Alberta* are reported separately; the *Prairies* region includes Saskatchewan and Manitoba; data for the province of *Ontario* are reported separately; and the region we call *Atlantic* consists of five provinces including New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. These regions represent logical groupings that combine data across Canadian provinces having similar oversight/governance structures [19] and overcome some of the reporting constraints related to using Statistics Canada data. Fig. 1 illustrates the composition of the five regions we refer to in this paper.

Table 1 shows that, with respect to demographics, there are similarities in trends toward increasing per capita proportions of seniors in the 75–84 and the 85+ years age groups, in all five regions. In four of five regions, there is a percent decline from 1996 to 2001 in the per capita proportion of 65–74-year olds. Only in the Atlantic region do we observe an increase in the per capita proportion of 65–74-year olds between 1996 and 2001.

While the demographics across the five regions are similar, in that they reflect net increases in the proportions of seniors over the interval 1996–2001, the expected increases in demand for LTC services are not consistently reflected as increases in the availability of institutional LTC services across regions.

In this paper we describe some of the variation in institutional LTC that currently exists across these five regions in Canada [3]. While this descriptive statistical analysis is a precursor to a national study of the operational efficiency of long-term care facilities [20], we believe that our observations are sufficiently compelling and informative to merit separate

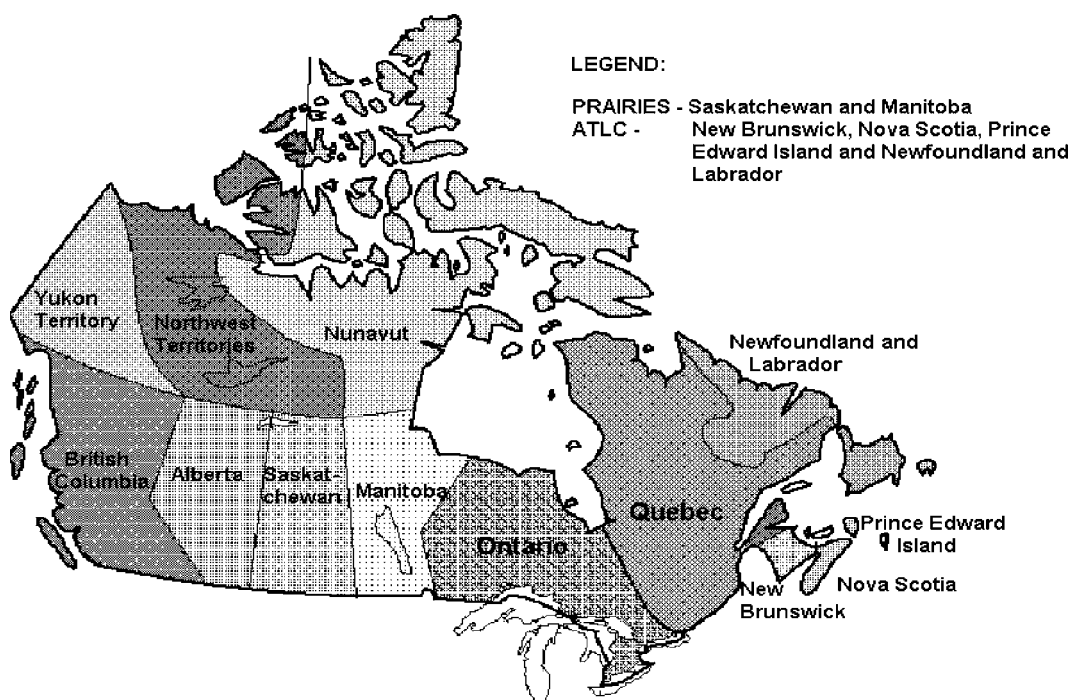


Fig. 1. Map of Canada.

Table 1
 Age distribution for 65 years and over, by province and territory: 1996 and 2001

	Age group (years)	1996 (no. of people)	2001 (no. of people)	Percent change 1996–2001	1996 (per capita × 100)	2001 (per capita × 100)	Percent change 1996–2001
Atlantic	65–74	161334	164931	2.23	6.78	7.05	3.90
	75–84	100770	107764	6.94	4.24	4.60	8.69
	85+	30260	36431	20.39	1.27	1.56	22.37
Ontario	65–74	804924	827712	2.83	7.26	6.96	–4.21
	75–84	422987	509905	20.55	3.82	4.29	12.30
	85+	127650	151677	18.82	1.15	1.27	10.69
Prairies	65–74	159386	151666	–4.84	7.40	7.05	–4.76
	75–84	105980	111181	4.91	4.92	5.17	5.00
	85+	35896	42411	18.15	1.67	1.97	18.25
Alberta	65–74	158707	174245	9.79	5.72	5.70	–0.32
	75–84	85923	103107	19.99	3.10	3.37	8.95
	85+	26332	33185	26.03	0.95	1.09	14.42
British Columbia	65–74	277943	290349	4.46	7.17	7.12	–0.77
	75–84	162044	188478	16.31	4.18	4.62	10.49
	85+	46517	60808	30.72	1.20	1.49	24.18

NB Data exclusive of Quebec, Nunavut, the Northwest Territories, and the Yukon Territory (see [3]). Source: Census of Canada 1996 and 2001.

discussion. We highlight facility-level characteristics, resident characteristics, levels of care provided, and staffing levels in Canadian LTC institutions and discuss the implications of these differences to policy makers seeking to improve the coherence and efficiency of the Canadian health care system with an eye to addressing some of the regional inequities in LTC that we observe here.

3. Data and methods

3.1. Data source

Our data are derived from the Residential Care Facilities Survey (RCFS) administered annually by Statistics Canada since 1974 to all residential care facilities operating in most Canadian [3] Provinces and Territories. For this study, we examined data collected through the RCFS between 1996 and 2001, and report here on 2001 data with some references to trends observable over the 1996–2001 interval. The RCFS is a census and its completion is a legal requirement under the *Statistics Act*. With the exception of Quebec, the survey data are collected via self-completed mail-out/mail-back questionnaires that are mailed out annually in March to all administrators of residential care facilities operating in Canada that are included in inventories provided annually by funders and licensors of facilities, the provincial and territorial ministries of health and/or social services. Thank you/reminder cards are mailed to facilities at the end of May, and during the summer of each year non-respondents are called. In the Fall, non-respondents are called again, and where possible, the survey is completed over the telephone [21]. In this paper, we focus on LTC facilities operating in Canada [22] in 2001, and include only those facilities reporting the principal characteristic of their residents as *Aged* (that is, residents who are 65 years old and older and may have disabilities associated with ageing). Facility-level data collected through the RCFS includes: (1) the facility's type, location, and ownership structure; (2) bed types and capacity; (3) personnel involved in the provision of direct care and general services to residents; (4) the age, sex, care requirements and morbidity distribution of residents; (5) the number of patient days provided; (6) the number of deaths and discharges each year.

3.2. Data accuracy

We compared RCFS data to the data collected by the Canadian Healthcare Association (CHA) [23] for the same observation years and observed data consistency with respect to facility location, size, aggregate staffing, and ownership.

3.3. Variable definitions

We use the four categories for *facility ownership* developed by Statistics Canada: lay, religious, government, and proprietary ownership. *Lay* ownership, which we refer to here as *Not-for-Profit*, signifies that a facility is owned and operated on a non-profit basis by a voluntary lay entity. *Religious* ownership refers to facilities operated as non-profits by a religious organization. *Government* [24] facilities include those operated by (1) municipalities or equivalents (i.e., also cities, counties, or other municipal government), (2) departments, branches, divisions or agencies of the Ontario government, (3) a federal department of the Government of Canada (e.g., Veterans' Affairs), and (4) a regional governance structure like a regional health authority, board, or district. *Proprietary* facilities, which we refer to as *For-Profit*, are those operated as for-profits by an individual, a private organization, or a corporation.

We measure *facility size* as the number of LTC beds in each facility operating in each observation year. For the purposes of reporting the regional data, we have developed three size categories: *Small* facilities range in size from 0 to 39 beds, *Medium*-sized facilities range from 40 to 99 beds, and *Large* facilities are over 100 beds in size. The number of LTC beds in a facility is reflective of production potential/capacity and is proportional to the resources that the organization uses for its day-to-day operations.

Box 1 defines the types of direct care providers as defined in the RCFS. For the figures that follow, the *RN* category is comprised of registered nurses as described in the textbox, the *RNA* category includes registered qualified nursing assistants/licensed practical nurses, the *Therapy* category includes physiotherapists, occupational therapists, other therapists, and activity/recreation staff, *Other Direct Care Staff* is comprised of all other direct care staff as per the textbox, and *Total Direct Care Staff* is the sum of hours of care provided on the part of all staff described in the textbox.

Box 1: Staffing—definitions for types of direct care providers

Registered nurses—are persons who have graduated from a recognised formal nursing educational program and have qualified to practise nursing as registered nurses according to appropriate provincial legislation. Depending on the size of the facility, this may include the Director of Nursing, the Assistant Director of Nursing, supervisors and general duty nursing staff who qualify as registered nurses.

Registered qualified nursing assistants/licensed practical nurses—are persons authorized to function as nursing assistants according to appropriate provincial legislation.

Physiotherapists/occupational therapists—a physiotherapist is a person qualified to practise by meeting the requirements of the Canadian Physiotherapy Association or equivalent standards and is responsible for the maintenance and improvement of the functional capacity of a resident through procedures including exercise, massage and manipulation. An occupational therapist is a person qualified to practise by meeting the requirements of the Canadian Association of Occupational Therapists, who is responsible for the maintenance and improvement of the functional capacity of the resident through the practice of activities of daily living and the development of vocational and manual skills.

Other therapists—would include speech therapists, child therapists, behaviour therapists, group therapists, etc.

Activity/recreation staff—any staff involved in setting up or maintaining a program of social activities, recreation, or hobbies for the residents.

Other Direct Care staff—would include nursing aides, health care aides, counsellors, child care workers, orderlies, social workers, graduate nurses, chaplain, etc.

Total Direct Care Staff—all staff involved in the care of residents; includes all of the above.

Source: Statistics Canada: Residential Care Facilities Survey 1999–2000 “Instructions and Definitions”

An accepted approach to studying the aspects of the quality of LTC that relate to resourcing is to examine staffing levels. Generally, levels of service provided across different care providers is estimated in terms of total hours of care per resident per day (hours/resident/day). This measure is referred to as nursing intensity when discussed in light of the acuity needs of residents and is established using accepted average nursing time for each of the 44 RUG-III case mix groups [25].

Here, we are limited by the RCFS data which does not document case mix. We therefore rely on somewhat cruder measures of *staffing intensity levels*, generally computed for each type of care staff *i* in facility *j* for year *k* as:

$$\text{staffing intensity} = \frac{\text{[total hours of care by staff in year/total number of residents]}}{365 \text{ days}}$$

We use the typology for *types of care* developed by Statistics Canada for use by all RCFS facility respondents. Box 2 summarizes the definitions developed by Statistics Canada.

We aggregate the *age distribution* categories used in the RCFS and present the survey data in three age-

related categories: “65–74”, “75–84”, and “over 85” years of age.

4. Results

4.1. The pan-Canadian picture

Table 2 summarizes our examination of facility characteristics by ownership across all regions. The Canadian LTC industry is dominated by proprietary For-Profits comprising 40.7% of the total LTC beds in Canada. Government and Not-for-Profits represent approximately equal proportions of the market, while Religious ownership lags far behind at 10.2% nationally.

There are significant differences in facility size that suggest interesting operational differences; Government owned facilities are significantly larger than For-Profit and Not-for-Profit facilities, with a mean facility size of 77 LTC beds. Facilities owned by Religious organizations are significantly larger than For-Profits

Box 2: Type of care equivalencies for Canadian LTC facilities

Type of care	Description	Provincial equivalencies	
Room and board with custodial care	Client needs a supportive environment with minor supervision Level: individual care to a maximum of 1/2 h each day	British Columbia	No formal equivalent
		Alberta	Type 1 (senior citizens lodges)
		Saskatchewan	Level 1 (supervisory care)
		Manitoba	No insured equivalent (group homes for various clientele)
		Ontario	Not known
		New Brunswick	Level 1 (supervisory care)
		Nova Scotia	Type 0 (supervisory care)
		P.E.I.	Type 0
		Newfoundland	Type 0
Type I	Client is independently mobile (able to walk or to use aids or wheelchair without assistance); needs supervision and assistance with activities of daily living; medical or nursing care, if needed, is standardized level: individual care from 1/2 h to a maximum of 1 1/2 h each day	British Columbia	Type 1 (personal care)
		Alberta	Type 1 (nursing homes)
		Saskatchewan	Level 2 (personal care)
		Manitoba	Level 1 (hostel care)
		Ontario	Type 1 (residential care)
		New Brunswick	Level 2 (limited personal care)
		Nova Scotia	Type 1 (limited personal care)
		P.E.I.	Type 1
		Newfoundland	Type 1
Type II	Client needs 24 h availability of personal care; medical and/or professional nursing supervision is required Level: individual care from 1 1/2 h to a maximum of 2 1/2 h each day	British Columbia	Type 2 (intermediate care—Levels I and II)
		Alberta	Type 2 (nursing homes)
		Saskatchewan	Level 3 (intensive personal or nursing care)
		Manitoba	Level 2 (personal care)
		Ontario	Type 2 (extended care)
		New Brunswick	Level 3 (intensive personal or nursing care)
		Nova Scotia	Type 2 (intensive personal care with nursing supervision)
		P.E.I.	Type 2
		Newfoundland	Type 2
Type III	Client needs 24 h availability of professional nursing care and supervision; medical management and/or therapeutic care are required Level: individual care for a minimum of 2 1/2 h each day	British Columbia	Type 2 (intermediate care—Level III)
		Alberta	Type 3 (auxiliary hospitals)

Type of care	Description	Provincial equivalencies	
Higher type	Client needs 24 h monitoring by professional nursing staff, but does not require all the resources of an acute care hospital	Saskatchewan	Level 4 (extended care)
		Manitoba	Level 4 (extended care)
			Level 3 (extended care)
		Ontario	Type 3 (chronic care)
		New Brunswick	Level 4
		Nova Scotia	Type 3 (extended hospital care)
		P.E.I.	Type 3
		Newfoundland	Type 3

Source: Statistics Canada: Residential Care Facilities Survey 1999–2000 “Instructions and Definitions.” This table has been modified from the original version: information for Quebec, Nunavut, the Northwest Territories and Yukon Territory has been omitted.

Table 2
Canadian long-term care facility characteristics (RCFS 2001/2002)

	For profit	Government	Not-for-profit	Religious
Total LTC beds (% of total Canadian ^a)	76490 (40.7%)	47380 (25.2%)	44977 (23.9%)	19049 (10.2%)
Mean facility size ^b	50	77 ^{c,d}	30	74 ^{e,f}
Staffing intensity levels (hours/resident/day)				
Total direct care	2.71	5.22	5.96 ^{g,h,i}	3.95
RN + RNA ^j	0.86	1.90 ^{c,d}	1.38	1.64 ^e
Therapy ^k	0.28	0.32	0.40	0.24
RN only ^l	0.48	0.83 ^{c,d,m}	0.68 ⁱ	0.61
Other direct care ⁿ	1.76	2.12	3.60 ^{g,h,i}	1.86
Other therapy ^o (therapy, other direct care and dietary staff)	2.18	2.81 ^c	3.99 ^{g,h,i}	2.45

^a NB Data exclusive of Quebec, Nunavut, the Northwest Territories, and the Yukon Territory (see [3]).

^b F -value = 29.38, $P < 0.0001$.

^c Significant differences denoted as: Government > For-Profit.

^d Significant differences denoted as: Government > Not-for-Profit.

^e Significant differences denoted as: Religious > For-Profit.

^f Significant differences denoted as: Religious > Not-for-Profit.

^g Significant differences denoted as: Not for Profit > Government.

^h Significant differences denoted as: Not for Profit > Religious.

ⁱ Significant differences denoted as: Not for Profit > For-Profit.

^j F -value = 53.56, $P < 0.0001$.

^k F -value = 2.26, $P = 0.0802$.

^l F -value = 18.65, $P < 0.0001$.

^m Significant differences denoted as: Government > Religious.

ⁿ F -value = 58.93, $P < 0.0001$.

^o F -value = 60.68, $P < 0.0001$.

and Not-for-Profits, with a mean size of 74 beds compared to 50 and 30 beds, respectively. Lay Not-for-Profits operate the smallest facilities with an average facility size of 30 LTC beds.

Table 2 also shows that significant differences exist across ownership types with respect to staffing intensity levels. Not-for-Profit lay organizations offer the highest levels of Total Direct Care at 5.96 h per resident per day, at levels that are significantly higher than those for all other ownership types. The highest levels of nursing staff intensity (hours of RN and RNA care) are found in Government owned and Religious facilities at 1.90 and 1.64 h per resident per day, respectively. Hence, while Government and Religious facilities tend to be larger than other facility types, they also offer higher staffing levels. At 1.90 h per resident per day (hrd), Government owned facilities have significantly higher nursing staff levels than For-Profits with levels of 0.86 hrd, – less than half that of Government owned facilities on average – and Not-for-Profit facilities at 1.38 hrd. At 1.64 h per resident per day, Religious facilities have significantly higher nursing staff levels than For-Profit facilities. When we focus on RN staff exclusively, we find that Government facilities have significantly higher RN staffing levels than all other types of facilities at 0.83 h per resident per day, while at 0.68 h per resident per day Not-for-Profit facilities have significantly higher staff levels than For-Profit proprietary facilities at 0.48 h per resident per day. Not-for-Profit facilities sustain significantly higher levels of Other Direct Care staff than in all other types of facilities.

4.2. Regional comparisons

In order to honour the restrictions imposed by Statistics Canada on the reporting of data, and still report on as much of the national data possible, we aggregated the data to five regions described previously. Between 1996 and 2001 there was a 6.7% increase nationally in LTC bed capacity in Canada; Table 3 shows percent changes in bed capacity as a function of individuals in each region 65 years of age and older. We observe a percent increase in LTC bed capacity as a proportion of the elderly population only in Ontario—reflective of a government initiative to increase institutional LTC capacity by 20,000 new beds that began in 2001. In Ontario in 2001, there were 4.911 beds for every 100 individuals

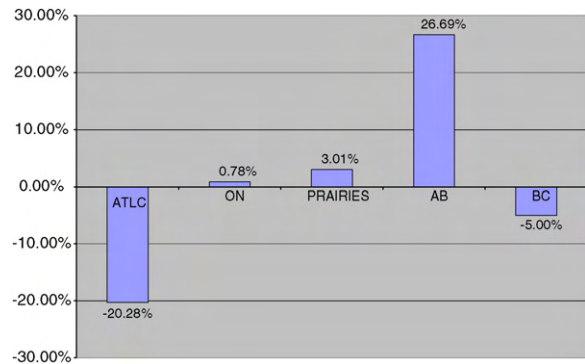


Fig. 2. Percent changes in proportions of seniors institutionalized by region 1996–2001.

65 years of age and older compared to 4.808 in 1996. For three regions – the Atlantic, the Prairies and British Columbia – we observe modest percent decreases in LTC bed capacity as a proportion of the elderly population that has occurred over the interval 1996–2001, consistent with LTC reform efforts over the study interval [19]. In Alberta, we observe a substantial decrease in LTC bed capacity as a function of the elderly population – from 5.256 per 100 elderly in 1996 to 4.607 per 100 elderly in 2001 – which is reflective of changes in government policy to increase efficiency of LTC service delivery [26].

Fig. 2 shows changes in the percent of seniors institutionalized, by region, from 1996 to 2001. For each observation year, the percent of seniors institutionalized was computed as the number of institutionalized residents 65 years of age and older divided by the total number of individuals 65 years of age and older residing in each region, multiplied by 100. We then computed the percent change for each region, between 1996 and 2001. By far the greatest percent increase in institutionalized residents is observed in Alberta at 26.7%, compared to modest increases in the Prairies (3%) and Ontario (0.8%). In the Atlantic region, we observe a 20% decrease in the number of seniors institutionalized and in British Columbia, we observe an overall decrease of 5%. Regional changes in the proportion of seniors receiving care in LTC facilities are reflective of increasing demand for LTC, particularly among the older senior cohort (see Table 1), and the consequence of region-specific reform initiatives. Reform initiatives differ across regions, where in Ontario [19] and Alberta [19,27], for example, increasing demand

Table 3
Long-term care bed capacity per individuals 65+ years

Province	1996 beds (per elderly population × 100)	2001 beds (per elderly population × 100)	% Change
Atlantic	6.267	6.148	–1.886
Ontario	4.808	4.911	2.142
Prairies	5.960	5.914	–0.765
Alberta	5.256	4.607	–12.358
British Columbia	3.769	3.626	–3.803

NB Data exclusive of Quebec, Nunavut, the Northwest Territories, and the Yukon Territory (see [3]). Sources: Statistics Canada Residential Care Facilities Survey and Census of Canada 1996 and 2001.

has been addressed through increasing LTC bed capacity, while in British Columbia additional funding was allocated toward assisted living/supportive housing and home care with no new construction of LTC facilities over the study interval.

4.3. Ownership

Fig. 3 shows the distribution of LTC facility beds by type of ownership. Considerable variation across the provinces exists, and several regional contrasts are particularly noteworthy. The LTC market in British Columbia is co-dominated by Not-for-Profits and For-Profits, with smaller market shares for Government and Religious operators. In Alberta, the Prairies, and Ontario, Government operators dominate the market at over 40% in each region. In contrast, For-Profits dominate the market among the Atlantic provinces, making up 40% of the total market share, followed by Not-for-Profits at 28%, Government at 22% and Religious operators at 10% of the market share.

4.4. Facility size

Fig. 4 provides a facility size breakdown by ownership type for each region in Canada. In British Columbia, where the market is co-dominated by For-Profit and Not-for-Profit operators, the Not-for-Profit facilities are present across all facility size groups, while Government owned and Religious facilities are predominantly large. By contrast, in Alberta, the Prairies, and Ontario the smaller facilities are predominantly Not-for-Profits. In Alberta and the Prairies, medium-sized facilities are primarily Government operators with similar proportions of ownership types distributed within the larger facility category. In Ontario medium-sized and large facilities are predominantly For-Profits, while the smaller facilities

are primarily owned by Not-for Profits, and Government facilities tend to be large. In the Atlantic region, where For-Profits dominate the market, these tend to be primarily small establishments; Not-for-Profits are present across all three size categories, while Government operators are generally medium to large in size.

4.5. Resident characteristics and resident care

We examined the age breakdown by ownership type across all regions. Fig. 5 shows that residents aged 65–74, 75–84, and 85+ years are similarly distributed across ownership types by region. That is, for each region, there is no evidence that any one ownership type is targeting any specific resident age group.

In contrast, Fig. 6 illustrates some obvious differences in market segmentation across regions.

In British Columbia, where For-Profits and Not-for-Profits co-dominate the LTC market, Fig. 6 suggests that neither ownership type targets any particular market segment as distinguished by level of care (we refer to the levels of care described earlier in Box 2). The data for Alberta, by contrast, show the clearest example of market segmentation; 56% of residents requiring Type I Care receive their care in Not-for-Profit facilities, 44% of residents requiring Type 2 Care receive their care in For-Profit facilities, while 65% of residents in need of Type 3 Care receive it in Government owned facilities. In the Prairie region most (49%) of the Type 1 Care is provided in Not-for-Profit facilities, and 53% of the Type 2 Care and Type 3 Care are provided by facilities that are Government-owned. In Ontario, For-Profits dominate all three market segments distinguished by level of care; however Not-for-Profit facilities focus on providing care to residents requiring Type 1 Care, while Government-owned facilities target the Type 3 Care market segment. In the Atlantic Provinces, For-Profits focus on residents requiring Type 1 Care, Not-for-Profit

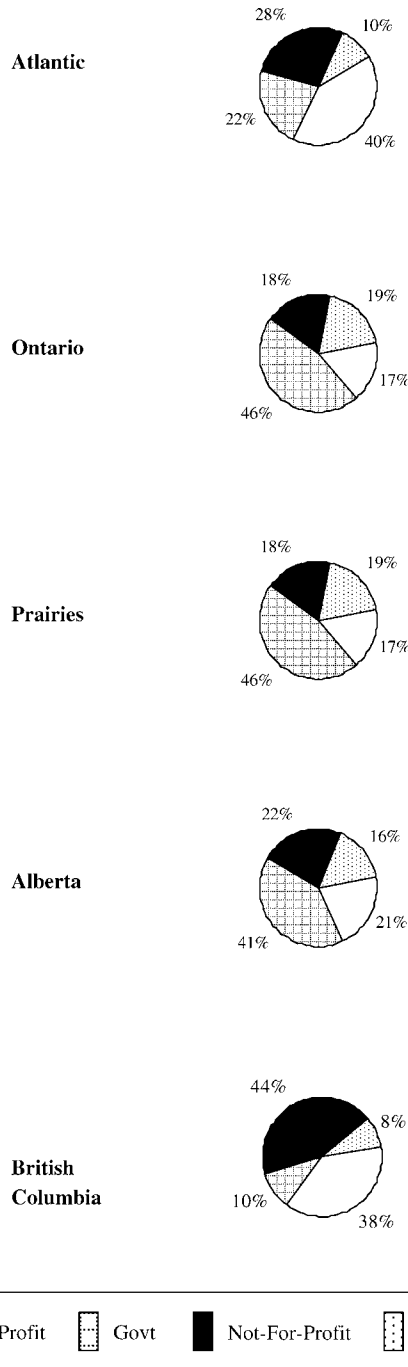


Fig. 3. Long-term care beds by region and ownership, 2001.

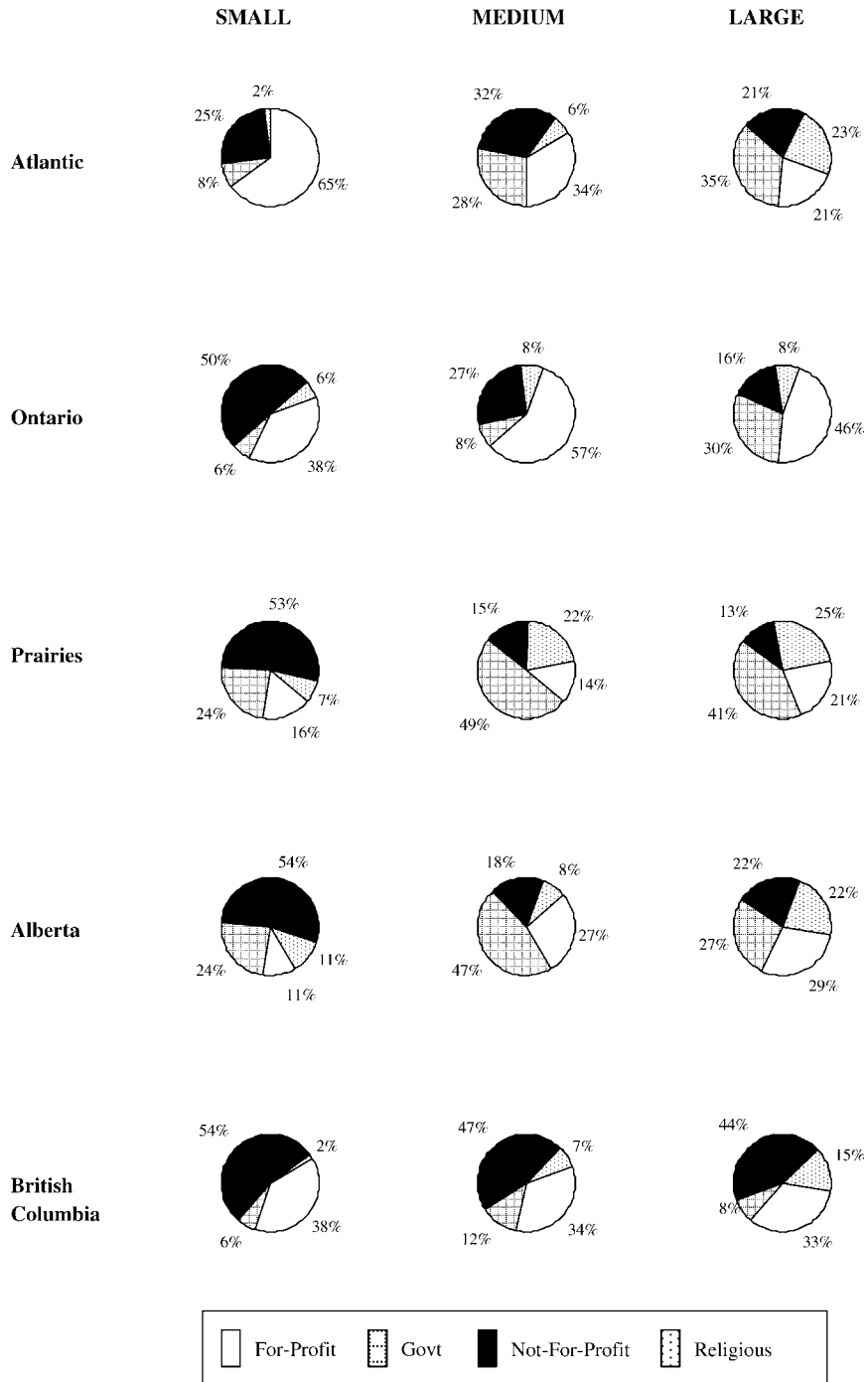


Fig. 4. Percent total of LTC beds by region, size and ownership, 2001.

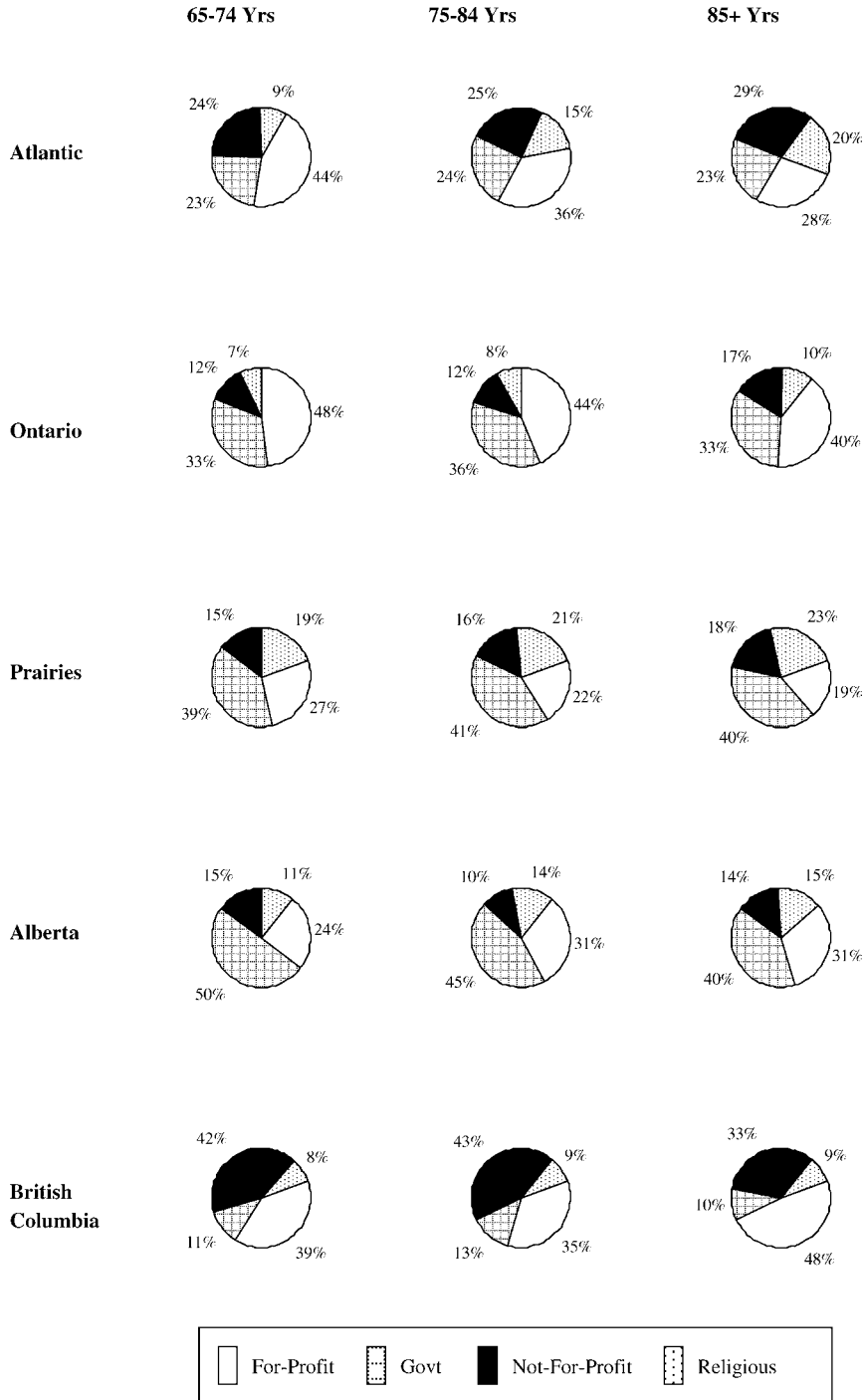


Fig. 5. Resident age breakdown by region and ownership.

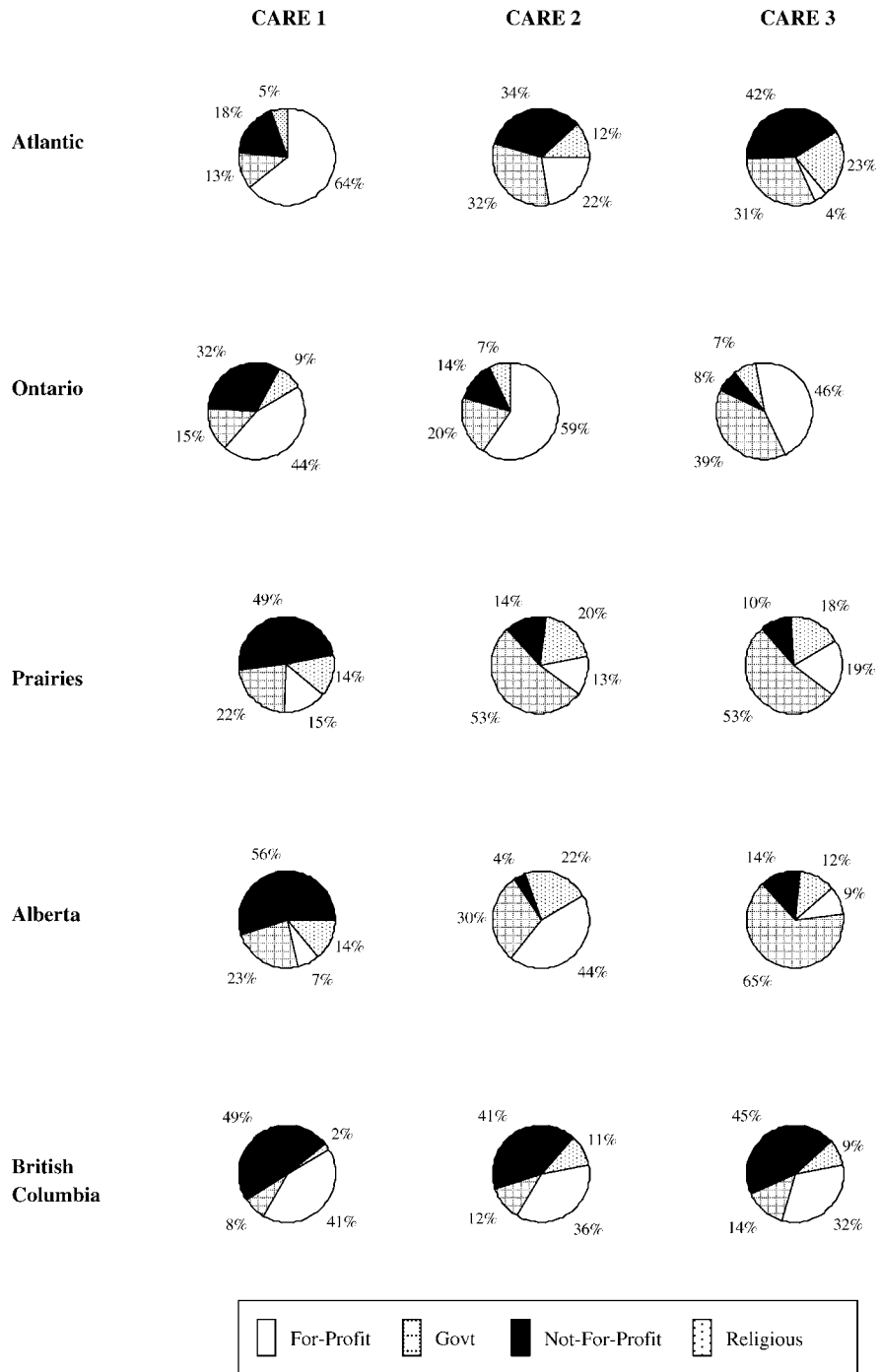


Fig. 6. Percentage of LTC beds by level of care, by region and ownership, 2001.

Table 4
Staffing intensity levels (hours of care/resident/day) by region (RCFS 2001/2002)

Region	Ownership	Total direct care	RN + RNA	RN only	Other direct care
Atlantic	For-Profit	1.98	0.91	0.57 ^a	1.95
	Government	8.32	2.57 ^{a,b}	1.13	3.15 ^{a,c}
	Not-for-Profit	5.91	1.84 ^d	0.77	3.01 ^{e,d}
	Religious	3.27	2.18 ^f	0.66	1.84
Ontario	For-Profit	2.41	0.66	0.38	2.15
	Government	4.26	1.15 ^a	0.39	2.46
	Not-for-Profit	5.79	1.13 ^d	0.61 ^{g,d}	4.65 ^{g,e,d}
	Religious	3.90	0.8	0.43	2.99
Prairies	For-Profit	2.69	1.24	0.42	2.37
	Government	4.22	1.68	0.88 ^a	3.07
	Not-for-Profit	5.56	1.49	0.79	4.50 ^{g,e,d}
	Religious	3.47	1.96	0.71	2.59
Alberta	For-Profit	4.44	1.59	0.58	2.29
	Government	5.20	3.03 ^{a,b}	0.97 ^a	2.71
	Not-for-Profit	5.68	1.87	0.49	3.69
	Religious	4.84	2.32	0.67	1.56
British Columbia	For-Profit	4.12	1.02	0.63	2.45
	Government	5.13	1.60 ^a	1.09 ^a	2.40
	Not-for-Profit	6.62	1.20	0.71	3.61 ^d
	Religious	4.30	1.25	0.64	2.75

NB Data exclusive of Quebec, Nunavut, the Northwest Territories, and the Yukon Territory (see [3]).

^a Significant differences denoted as: Government > For-Profit.

^b Significant differences denoted as: Government > Not-for-Profit.

^c Significant differences denoted as: Government > Religious.

^d Significant differences denoted as: Not for Profit > For-Profit.

^e Significant differences denoted as: Not for Profit > Religious.

^f Significant differences denoted as: Religious > For-Profit.

^g Significant differences denoted as: Not for Profit > Government.

and Government-owned facilities focus on Type 2 Care provision and, and Type 3 Care is provided primarily by Not-for-Profit facilities.

We examined various staffing intensity levels across the five regions. Table 4 summarizes our findings.

Research completed in other jurisdictions shows that there are structural differences relating to staffing across ownership types [28]. Here, we too are interested in any detectable differences in staffing levels by ownership. Table 4 shows that staffing intensity levels are generally higher overall in Government and Not-for-Profit facilities in every region we study. In the Atlantic provinces, nursing staff (RNs + RNAs) intensity levels are highest in Government facilities, followed by Not-for-Profit, Religious and For-Profit in descending order. Similarly, staffing intensity levels are significantly higher in Government facilities in British Columbia, in Alberta, and in Ontario. In all five regions, Other Direct Care intensity is significantly higher in the Not-for-Profit facilities.

5. Discussion

Our discussion below highlights four key observations relating to regional similarities and differences across market environment-level characteristics, organizational characteristics, and the types of care provided in facilities by ownership.

Our first key observation relates to the differences we observe in the distribution of LTC facilities by type of ownership across regions. The facility-based LTC market in Alberta, the Prairies and Ontario is dominated by government owned facilities, while For-Profits dominate Eastern Canada, and For-Profits and Not-for-Profits co-dominate the West. The implications of ownership in the institutional LTC sector have been the focus of numerous studies, reports and debates spanning the last two decades. Ownership is a structural dimension that influences the ways in which – and ease with which – facilities secure capital and pursue growth, as well as their capacity to address res-

idents' needs and health issues [29]. Differences in ownership reflect fundamental disparities in the missions and operations of long-term care facilities. Profit status, in particular, governs a nursing home's mission [30] which in turn influences organizational priorities and behaviour. In theory, non-profit operators re-invest their revenues in initiatives designed to improve performance and ensure the provision of less profitable services and charity care. On the other hand, for-profit organizations are beholden chiefly to their shareholders, and so are less likely to invest their revenues in service and facility improvements [31–33]. In jurisdictions outside of Canada, some research shows that for-profit facilities provide fewer types of services, maintain lower staff ratios than non-profits, and realize higher rates of adverse outcomes e.g., pressure sore rates and restraint use rates [5,28,34]. Empirical research, however, is inconclusive [35]; other research demonstrates that for-profit status is related significantly to lower rates of adverse outcomes e.g., mortality rates [36]. These mixed findings underscore the need to examine the contexts in which these studies are taking place for more nuanced insights into the ownership–performance relationship. Hirth [37], for example, suggests that a true understanding of the relationship between ownership and performance outcomes can only be achieved through study of competitive dynamics between for-profits, not-for-profits and other ownership types operating in the same market. Realistically, non-profits must also maintain a positive financial balance and managers of non-profits, because they are also agents of community owners, may act as competitively as their for-profit counterparts. Moreover, it has been proposed that the presence of non-profits in the market will drive for-profit nursing homes to be more responsive to the community [34]. No research examining the question of competitive dynamics has been conducted in the Canadian LTC sector. Our findings clearly suggest that there is much to be learned from the natural experiments we examine here; for example, Hirth's assertions suggest that the co-dominance of for-profits and non-profits observed in British Columbia may afford residents a higher quality of care and better health outcomes than their counterparts in the other regions. This is an area then worthy of further study. Indeed, studies of optimal market mix, as it relates to resident outcomes, is an area of study for which the Canadian LTC market-

place is ideally suited given the regional variation that exists.

Our second key observation relates to facility size. Here we find that government-owned facilities are significantly larger than facilities of other ownership types. Like ownership, organizational size reflects, and sustains, operational differences. Organizational size is related to organizational viability and performance since it impacts an organization's ability to secure vital resources – like knowledge, capital and human resources – and to respond to change (e.g., new regulations) [24,38]. The work of policy analysts and researchers in Canada suggest that the low subsidy levels [39], coupled with the increasing stringency of regulations [40], have resulted in an operating environment that may discriminate against very small facilities. That is, very small facilities – availed of fewer resources – are unable to exploit the economies of scale in some aspects of their operations that their larger counterparts can, and so may be disadvantaged when it comes to meeting costly provincial standards (e.g., general operations including financial reporting requirements and upgrades to the physical facility) and/or new stipulations concerning staffing (e.g., stipulations concerning the qualifications and experience of staff, or minimum staffing requirements). This phenomenon has been observed in LTC in other regions, and across several other industries [4,24,41]. Further, small facilities are generally managed by a lone administrator and/or a few management staff, and these individuals may spend most of their time “fire fighting”—handling immediate operational or clinical problems with little opportunity (or even expertise) to engage in strategic planning for service expansion or responding to changes in government regulation [46]. While a policy emphasis on operational efficiency makes large facilities more viable than small facilities, there is evidence that size can exert negative impacts on quality of care [26]. Smaller facilities may offer more home-like environments and afford staff the opportunity to interact on a more personal level with residents, beyond the provision of care. Research questions that are worthy of future exploration in the Canadian context, then, include whether and how extensively facility size impacts the ability of staff to respond effectively to their residents, to offer specialty services, and to implement quality improvement initiatives like clinical practice guidelines. Further, we need to disentangle the effects of size, and

ownership, on performance outcomes. Again, the variation we observe here across Canadian regions offers an ideal landscape in which to examine some of these questions.

Our third key observation relates to the differences we observe in staffing intensity levels nationally, and across the five regions we study. Some studies show significant differences in staffing levels by ownership type [5,28], hence we undertake similar comparisons here. We find significant differences in staffing levels across ownership types, and remark on a few consistent findings. When compared to other facility ownership types, total direct care staffing levels are significantly higher in government-owned and not-for-profit facilities across all regions. However, government and not-for-profit facility owners achieve these levels in different ways. Government-owned facilities tend to rely on regulated staff, and we observe significantly higher nursing staff intensity (RN + RNA hours per resident per day) levels for government facilities over for-profit facilities in four of five regions. In contrast, not-for-profit facilities rely heavily on unregulated staff (e.g., nurses aides, health care aides) for resident care, with other direct care staffing levels significantly higher than for-profit facilities in four of five regions, and levels significantly higher than religious facilities in four of five regions. Overall, proprietary for-profit operators have the lowest levels of staffing intensity across three of the four indices we estimate: total direct care, all regulated staff, and RN staff. With the exception of religious facilities in the Atlantic and Alberta regions, for-profits also have the lowest staffing intensity levels for other direct care. A recent study conducted by Jette et al. [42] shows that nursing (RN, LPN and CNA hours) and therapy (PT, OT and speech language therapy hours) staffing intensity levels contribute independently and significantly to explaining the likelihood of discharge back-to-community among residents in U.S. nursing homes. Residents receiving 1–1.5 h of therapy per day were 22% more likely to return to their community, while residents in facilities administering over 1.5 h of therapy per day were twice as likely to be discharged back to the community. In Canada, seniors generally receive therapeutic and rehabilitative care outside of LTC facilities through community care programs and day hospitals. Seniors in Canada who are institutionalized are generally not expected to return to their communities, perhaps explaining the dearth of therapeutic

services available in nursing facilities—the national average therapy intensity level is 0.24 h per resident per day. Regardless, therapy intensity has been linked empirically to improvements in cognition, therefore we suggest that further investigation of therapy intensity levels in Canadian LTC facilities are warranted, at the very least to ensure that they are sufficient.

The regional staffing levels we estimate here using the RCFS data are comparable to those provided elsewhere for Canada [23,26,43]. The Canadian national average for total direct care staffing levels of 4.47 h per resident per day is lower relative [44] to that for the U.S. at 5.70 [6,22] and higher relative to that for the Netherlands at 3.3 [41]. The Canadian national average for RN intensity of 0.65 h per resident per day is higher relative to the U.S. national average of 0.53 RN hours per resident per day while both are lower than the RN intensity levels in the Netherlands at 0.9 h per resident per day [41]. While the RCFS does not capture outcomes or process of care data, the positive relationship between nurse staffing intensity and quality of care is well-established [6]. Given our observations here relating to staffing levels, the critical question that emerges for Canadian LTC policy makers and one which begs further research – as it has for policy makers in the U.S. [6,22] – is whether current staffing levels in (Canadian) regions are *adequate* and variation *acceptable*.

Our fourth observation relates to the characteristics of residents of LTC facilities, by region and ownership. We detect no notable differences in the age distribution of residents across regions by ownership. However, even our simple analysis suggests striking differences in the types of care residents receive, by ownership type. These differences complement those in staffing levels we highlight above. Residents requiring more complex care – Types 2 and 3 – reside predominantly in government-owned facilities in four of five Canadian regions where we generally observe the highest nursing staff intensity levels and overall total direct care staffing levels. On the other hand, in four of five regions, residents needing Type 1 Care reside in Not-For-Profit facilities where we generally observe the highest unregulated staffing levels. Whether these are the manifestations of intentional strategic marketing/targeting decisions on the part of particular ownership types, or of historical-political processes, or both, we are unable to answer here. The related future research questions of importance suggested by these observations

are whether and how this market segmentation impacts access to, and quality and availability of, types of long-term care needed by facility residents.

5.1. Limitations

This study is subject to some limitations. First, all of the data provided in the RCFS are self-reported by facility administrators, or by chain headquarters, and therefore prone to the inherent biases of self-reported data collection [45]. Second, while this is not the first time that the RCFS data have been analysed [46] the data have yet to be fully validated against other sources. Third, the RCFS is a census and completion is mandatory, however, we note that a small, unsystematic proportion of facilities fail to respond each year, representing up to 10% of all possible respondents. Finally, the availability of volunteer care and of additional care paid for by residents' families – known to influence the quality of resident care – is not captured through the RCFS [2].

6. Conclusion

In this paper, we offer a contemporary profile of the Canadian institutional LTC sector that can serve as a backdrop to future empirical studies. Our work complements the recent work of others who have invested in descriptions of differences in funding, governance and ownership that persist across Canadian regions which contribute to differences in access, affordability and quality of long-term care [2,47]. We highlight four key observations relating to LTC organizations operating in Canada and propose future research questions that will facilitate understanding of the implications of the regional differences we observe.

In Canada, as with other developed countries where care of the aging population is emerging as a public policy priority, research that explores the sources and complexities of performance variation in LTC has been identified as critical to improving industry effectiveness and efficiency [2,48]. Research in the organization and management sciences demonstrates that a substantial proportion of performance variation across organizations is explained by differences in facility-level factors [49]. The facility-level characteristics we focus on here – ownership, facility size,

resident characteristics and direct care staffing levels – have all been linked empirically with quality of resident care and other LTC performance outcomes [4,41]. These characteristics along with others including organizational structure, management strategy, geographic location, and local market competition influence a facility's operations and performance via their impacts on decision-making, knowledge transfer, and the availability of vital resources and inputs. We provide no proof that the inequities and variations we observe are undesirable – in terms of their impact on resident health outcomes or quality of care – and indeed this was not our objective. However, we hope that the observations we present here precipitate a decision on the part of LTC policy makers to engage researchers in the assessment of the impacts of these inequities and variations on the viability and performance of LTC facilities, including the quality of resident care and, in turn, to orchestrate changes in LTC policy that address those inequities with the greatest consequences to care.

Acknowledgements

This research paper has received funding support from the Canadian Institutes for Health Research (CIHR) and the Social Sciences and Humanities Research Council (SSHRC). We extend our thanks to members of our project Advisory Committee including Dr. Jane Banaszak-Holl, Dr. Larry Chambers, Mr. David Harvey, Mr. John Lohrenz, Ms. Joy Richards, Ms. Kathy Paddock, Dr. John Morris, Mr. Richard Trudeau, Ms. Krista Robinson, Dr. Patricia Reay, Dr. Evelyn Shapiro, Ms. Lauren Scott, and Ms. Eileen Wilson for their insights and discussions that have contributed to this work. We extend special thanks to Dr. Raisa Deber for her comments on an early draft of our proposal and to M-THAC for providing start-up funding for the proposal development. We thank Mr. Greg Payne for his research assistance.

References

- [1] Harrington C. Regulating nursing homes: residential nursing facilities in the United States. *British Medical Journal* 2001;323:507–10.
- [2] Canadian Healthcare Association. *Stitching the patchwork quilt together: facility-based long-term care within continuing*

- care—realities and recommendations CHA policy brief. CHA Press; 2004.
- [3] The data we use are derived from the Residential Care Facilities Survey (RCFS) administered annually by Statistics Canada to administrators of LTC facilities across Canada. The RCFS data are available from 1974 via a moving window; typically data are releasable 2–3 years after its collection. The RCFS data are available for all Provinces and Territories with the exception of Quebec. In this paper, we exclude Quebec, Nunavut, the Northwest Territories and the Yukon Territory. Administrative data files compiled for private and public facilities operating in Quebec are submitted annually to Statistics Canada in a format that differs significantly from the RCFS. We exclude Nunavut, the Northwest Territories and the Yukon Territory because the number of LTC facilities is not sufficiently large to report on these regions independently and do not adhere to the reporting practice rules of the data provider, Statistics Canada even when the three regions are combined. Further, combining these data with that of proximal geographic regions like the Province of British Columbia is not meaningful, since they are quite distinct in terms of their demographics, the extent of geographic dispersion of health care service organizations including LTC facilities, and the ownership of LTC facilities.
- [4] To address reporting restrictions detailed in [3], we confine our analysis to data relating to 5 regions across Canada: Atlantic (consisting of five provinces including New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador), Ontario, Prairies (Manitoba and Saskatchewan), Alberta and British Columbia. The Atlantic and Prairies regions combine data across Canadian provinces with similar oversight/governance structures and similar funding structures.
- [5] Banaszak-Holl J, Zinn JS, Mor V. The impact of market and organizational characteristics on nursing care facility service innovation: a resource dependency perspective. *Health Services Research* 1996;31(1):97–117.
- [6] Harrington C, Woolhandler S, Mullan J, Carrillo H, Himmelstein DU. Does investor ownership of nursing homes compromise the quality of care? *American Journal of Public Health* 2001;91(9):1452–5.
- [7] Harrington C, Zimmerman D, Karon SL, Robinson J, Beutel K. Nursing home staffing and its relationship to deficiencies. *Journal of Gerontology* 2000;55B(5):S278–87.
- [8] Binstock RH, Spector WD. Five priority areas for research on long-term care. *Health Services Research* 1997;32(5):715–30.
- [9] Organization for Economic Co-operation, Development. Long-term care for older people. OECD Publishing; 2005.
- [10] The Canadian Chamber of Commerce. Reforming Canada's Health Care System: A Matter of Social and Fiscal Policy. October 30; 2001.
- [11] Romanow R. Commission on the Future of Health Care in Canada. Building on values: The future of health care in Canada—final report; 2002. <http://www.hc-sc.gc.ca/english/care/romanow/hcc0086.html> Accessed December 2002.
- [12] The Guardian Business. <http://www.guardian.co.uk/business/story/0,1408676,00.html> Accessed February 2005.
- [13] Batljan I, Lagergren M. Demographic influence on health care and long-term care demand—different methods? Presentation prepared for the OECD Workshop Understanding Trends in Disability among Elderly Populations and the Implications of Demographic and Non-demographic Factors for Future Health and Long-Term Care Costs; 2004 http://europa.eu.int/comm/economy_finance/events/2005/events_brussels_0205_en.htm Accessed November 2005.
- [14] Evans RG, McGrail KM, Morgan SG, Barer ML, Hertzman C. Apocalypse no: population aging and the future of health care systems. *Canadian Journal on Aging* 2001;20(Suppl 1):160–91.
- [15] Deber R, Williams AP. Country Portrait: Canada. In: Paper presented at the Four Country Conference on Aging and Health Policy. 2001.
- [16] Standing Senate Committee on Social Affairs, Science and Technology <http://www.parl.gc.ca/37/1/parlbus/commbus/senate/com-e/SOCI-E/rep-e/repjan01vol2-e.htm> Accessed December 2002.
- [17] Hebert R. Research on Aging: Providing Evidence for Rescuing the Canadian Health Care System. Submission to the Romanow Commission; 2002.
- [18] Cohen M, Murphy J, Nutland K, Ostry A. Continuing Care Renewal or Retreat? BC Residential and Home Health Restructuring 2001–2004; 2005. http://www.policyalternatives.ca/documents/BC_Office_Pubs/bc_2005/continuing_care.pdf Accessed November 2005.
- [19] Canadian Healthcare Association. Facility-based long-term care: a pan-Canadian reference; 2003. <http://www.cha.ca/documents/PT%20Organization%20Governance%20f%20FLTC.pdf> Accessed December 2004.
- [20] Operational Efficiencies in Long-Term Care Facilities in Canada (Canadian Institutes of Health Research). W. Berta and A. Laporte, Co-Principal Investigators. V. Valdmánis and G. Anderson, Co-Investigators, 2004–2007.
- [21] For further details on data sources and methodology, see the Statistics Canada website at <http://stcwww.statcan.ca/english/sdds/3210.htm>.
- [22] Among the facilities included under the term residential care facilities are facilities offering services to persons with physical disabilities, persons who are developmentally delayed, persons with psychiatric disabilities, persons with alcohol and drug problems, emotionally disturbed children, transients, young offenders and others (Statistics Canada 2004).
- [23] Refer to the Canadian Healthcare Association website <http://www.cha.ca/publishing.htm> for information about the annual Guides to Canadian Healthcare Facilities. RCFS respondents represent between 95% and 100% of the total bed capacity in Canada in any given observation year between 1996 and 2002; we did not detect any systematic differences across respondents based on their size or ownership over the study interval.
- [24] In adherence to the reporting policies of Statistics Canada, we combine these categories and report them as Government-operated facilities. They are reported separately in the RCFS.
- [25] Mueller CH. Cautions about nurse staffing standards for nursing homes. *Journal of Gerontological Nursing* 1999;25(5):6.
- [26] Wilson DM, Truman CD. Long-term care residents. *Canadian Journal of Public Health* 2004;95(5):382–4.

- [27] Alberta Health and Wellness. Tracking Progress: A Progress Report on Continuing Care Reform in Alberta; 2000. http://www.health.gov.ab.ca/key/longterm/lc_progress_report.pdf Accessed November 2005.
- [28] Centers for Medicare & Medicaid Services (2000). Appropriateness of minimum nurse staffing ratios in nursing homes phase II final report. Retrieved December 16, 2004. <http://www.cms.hhs.gov/medicaid/reports/rp1201home.asp>.
- [29] Banaszak-Holl J, Berta W, Baum JAC, Mitchell W. Comparing service and quality among chain and independent nursing homes during the 1990s. *Journal of Aging and Social Policy*, submitted for publication.
- [30] Robinson JC. Organizational economics and health care markets. *Health Services Research* 2001;36(1/2):177–89.
- [31] Lemke S, Moos RH. Ownership and quality of care in residential facilities for the elderly. *The Gerontologist* 1989;29:209–15.
- [32] Rosko MD, Chilingirian JA, Zinn JS, Aaronson WE. The effects of ownership, operating environment, and strategic choices on nursing home efficiency. *Medical Care* 1995;33:1001–21.
- [33] Weisbrod BA, Schlesinger M. Public, private, nonprofit ownership and the response to asymmetric information: the case of nursing homes. In: Rose-Ackerman S, editor. *The economics of nonprofit institutions: studies in structure and policy*. New York: Oxford University Press; 1986. p. 133–51.
- [34] Mitchell W, Venkatraman A, Banaszak-Holl J, Baum JAC, Berta W. The commercialization of nursing home care: does for-profit efficiency mean lower quality or do comparisons provide the best of both worlds? Paper presented at the 2003 Strategic Management Society Conference. 2003.
- [35] Cohen JW, Dubay LC. The effects of reimbursement method and ownership on nursing home costs, case mix and staffing. *Inquiry* 1990;27:183–200.
- [36] Zinn JS, Aaronson WE, Rosko MD. Variations in the outcomes of care provided in Pennsylvania nursing homes. *Medical Care* 1993;31(6):475–87.
- [37] Hirth RA. Consumer information and competition between nonprofit and for-profit nursing homes. *Journal of Health Economics* 1999;18:219–40.
- [38] McKelvey B. *Organizational systematics*. Berkeley: University of California Press; 1982.
- [39] For example, a report prepared by the Long Term Care Facility Funding Review Committee in October 2000 cites the per diem approved through Ontario's level of care funding model as the lowest of all Canadian Provinces, at \$104 (Long Term Care Facility Funding Review Committee 2000: 14).
- [40] The implementation of the Long Term Care Facility Manual in 1993 is cited as the source of the most profound effects related to regulatory stringency (personal communication with John Lohrenz July 2003). However, the long-term care sector has been the focus of reform for the past two decades.
- [41] Pfeffer J, Salancik GR. *The external control of organizations*. New York: Harper and Row; 1978.
- [42] Jette DU, Warren RL, Wirtalla C. Rehabilitation in skilled nursing facilities. *American Journal of Physical Medicine & Rehabilitation* 2004;83(9):704–12.
- [43] Price Waterhouse Coopers. Report of a Study to Review Levels of Service and Responses to Need in a Sample of Ontario Long Term Care Facilities and Selected Comparators. Prepared for the Canada Long Term Care Association and the Canada Association of Non-Profit Homes and Services for Seniors, Toronto, Ontario; 2001.
- [44] Exact staffing level comparisons between Canada and other countries is difficult given different definitions of nursing categories and training; we comment here therefore on relative differences across countries.
- [45] Jackson W. *Methods: doing social research*. Toronto: Prentice-Hall; 2003.
- [46] Hicks V, Fortin G, Button I. Long term residential care in national health expenditures: feasibility study. Canadian Institute for Health Information; 2002.
- [47] Hollander MJ. Final report of the study of comparative cost analysis of home care and residential care services. Substudy 1 of the national evaluation of the cost-effectiveness of home care. Prepared for the Health Transition Fund, Health Canada. Victoria: National Evaluation of the Cost-Effectiveness of Home Care; 2001.
- [48] Smith M. *Commitment to care: a plan for long-term care in Ontario*. Toronto: Ministry of Health and Long-Term Care; 2004. http://www.health.gov.on.ca/english/public/pub/ministry_reports/lc_04/mohltc_rep04.html Accessed December 2004.
- [49] Baum JAC. Organizational ecology. In: Clegg SR, Hardy C, Nord W, editors. *Handbook of organization studies*. London: Sage; 1996. p. 77–114.