

**MAPPING POTENTIAL HEALTHCARE NEEDS IN  
QUEBEC'S ELDERLY POPULATION: APPLYING GIS  
TOOLS TO POPULATION HEALTH DATA**

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## **Abstract**

Exploratory analyses of the CCHS (2003) confirm that ability to pay does not constitute a major barrier to access to health care. Yet some people still face barriers to access to primary care in Quebec. We looked at these barriers in elderly population in Quebec's health regions. The aim is to characterize Quebec's elderly population with regard to its potential needs for health care using Canada's census and survey data. We also applied GIS tools to characterise service availability in Quebec's health regions. We find that most resources of the Montreal metropolitan area and its contiguous regions are concentrated in central Montreal. There are disparities in access to care, particularly in access to family physician. Although we find no clear cut pattern in the spatial distribution of the prevalence of chronic diseases, there are notable disparities of the prevalence of functional limitations and of obesity. Compared to Ontario and the rest of Canada, Quebec is disadvantaged with regard to access to family physicians but its elderly population has lower prevalence of chronic conditions and functional limitations.

### **Keywords**

Elderly, Quebec, access, primary healthcare, health regions, GIS, CCHS

## **Résumé**

Des analyses exploratoires de l'ESCC (2003) confirment que la capacité financière ne constitue pas un obstacle majeur à l'accès au système de santé. Cependant des sous populations vulnérables font toujours face à des barrières à l'accès aux soins de santé primaires au Québec. Nous explorons les obstacles auxquels les aînés du Québec font face. L'objectif étant de caractériser cette sous population en ce qui concerne ses besoins potentiels en soins de santé primaires sur la base des données du recensement et de l'enquête de santé. Nous utilisons les outils du SIG pour caractériser la disponibilité des services au niveau des régions sociosanitaires. Nous trouvons que la majorité des ressources de la région métropolitaine de Montréal et des régions avoisinantes sont concentrées au centre de Montréal. Il y a des disparités dans l'accès aux soins, en particulier dans l'accès au médecin de famille. Bien que nous ne trouvions pas de profil évident dans la distribution spatiale de la prévalence des maladies chroniques, nous trouvons des disparités importantes dans la prévalence des limitations fonctionnelles et de l'obésité. Comparé à l'Ontario et au reste du Canada, le Québec est désavantagé quant à l'accès au médecin de famille, cependant ses aînés se portent mieux quant à la prévalence de maladies chroniques et de limitations fonctionnelles.

### **Mots-clés**

Aînés, Québec, accès, soins primaires, régions sociosanitaires, SIG, ESCC.

## **INTRODUCTION**

### ***Context***

Access to care in a universal health care system depends normally on need rather than income or wealth. Although healthcare is the responsibility of the provinces in Canada, the federal government set mechanisms to warrant universal access to healthcare services nationwide. Exploratory analyses of the *Canadian Community Health Survey 2003* (Sanmartin, Gendron, Berthelot and Murphy 2004) confirm that ability to pay does not constitute a major barrier to access to health care. Yet factors other than financial still impact health services utilization (Dunop, Coyte et McIsaac 2000; Finkelstein 2001; Kasman et Badley 2004; Wilson and Rosenberg 2002; Kirby et Kaneda 2005). Hence healthcare professionals and the public at large expressed concerns regarding access to care (Anonymous 2004, Shortt 1999, Wilson et Rosenberg 2002). These concerns call for studying the determinants of needs for care in order to identify and characterize potential barriers to access, particularly those that hinder the access of vulnerable subpopulations such as the elderly (Neil, Denton, Robb and Spencer 2006).

The 2006 census data show the proportion of elderly in Quebec's population increased; an increase assorted with unbalanced geographic distribution of the population. For example, the proportion of elderly 65 years old and older increased from 13 to 14 percent from 2001 to 2006. The proportion of population 55 years old and older was 34 percent in 2006, and 82 percent of the residents 55 years old and older live in urban areas but only 18 percent live in rural areas.

### ***Objective***

This paper has two-tier objective: (1) to characterise the health care system in Quebec and the population its serves; (2) to report preliminary results of an ongoing research which looks at barriers to access to healthcare in elderly population in Quebec. In this part, we aim to characterize Quebec's elderly populations with regard to its potential needs for health care using census and survey data, we supplemented with administrative

data. We focus on potential needs for care and the supply of services cross the province's health regions.

### ***Conceptual framework***

The behavioural model of healthcare utilisation (Aday, Begley, Lairson, and Slater 1998; Andersen 1968, 1995) provides the organizing framework of this research. The model classifies the determinants of access into three categories: (1) predisposing characteristics, (2) enabling resources, and (3) needs. The outcome variable in turn points to two types of access: (1) potential access which refers to service availability, and (2) realized access which refers to the actual utilization of those services. The focus here is on potential access and needs for care in the province's elderly population.

### ***Data and methods***

Part one of the paper is entirely based on secondary data we collected and processed in order to provide complete background information about Quebec's population characteristics and its social and healthcare services.

For the second part of the paper, we elected at the outset a perspective based on complex data as described in Bernard, Lemay et Vézina (2004). We used data extracted from Canada's census (2001), the *Canadian Communities Health Survey (CCHS 2003)*, as well as administrative data to create a database suitable for spatial analysis. We then used the tools of a Geographic Information System to compare and contrast the health regions between themselves and the province of Quebec to that of Ontario and the rest of Canada.

The CCHS was designed to provide representative information at the health region level for all the provinces. It provides information on respondent's health, on healthcare services delivery in each administrative unit. We extracted a sub-sample of 27599 respondents representing the province's population 12 years old and older from the CCHS 2003 public use dataset. This subsample included 5580 respondents 65 years old and older living in 15 health regions out of the province's 18 health regions. Three health regions (Nunavik, Terres-Cries-de-la-Baie-James, and Nord-du-Quebec) were omitted from the analysis for lack of suitable data.

We used *ArcGIS* to generate maps to visualize the characteristics of Quebec's elderly. This characterization informs about the potential needs for healthcare. We used the sampling weights provided by Statistics Canada in order to account for the survey's complex sampling scheme and produce results that are representative of the total population.

First, we compare and contrast the 15 Quebec's health regions. Then, we examine differences between Quebec and the neighbouring province of Ontario, and the rest of Canada. We report as conclusive only those results that meet at least a 95 percent confidence level of statistical significance. We made every effort to make the reported estimates compliant with the guidelines of Statistics Canada for results dissemination. First, we provide background information on the healthcare system in Quebec with focus of the supply and demand for healthcare.

## **QUEBEC'S HEALTHCARE SYSTEM AND POPULATION**

### ***Quebec's health care system***

The healthcare system in Quebec is mixed with heavy control by the provincial and federal governments. The state acts as administrator of the range of services available to the population. The health care system is a 3-level organisation: central, regional, and local levels. At the central level, the ministry of health and social services set the orientations and strategic goals of the health and social services. The ministry also assesses the results obtained with regard to preset policy objectives. At the regional level, eighteen agencies of health and social services operate. Each agency is responsible for one health region. They organise and coordinate services and allocate the budgets to the health facilities within the health region territory. Part of the mission of these agencies is to adapt the services to the needs and specificities of the groups they serve; hence the pertinence of analyzing potential needs at this regional level.

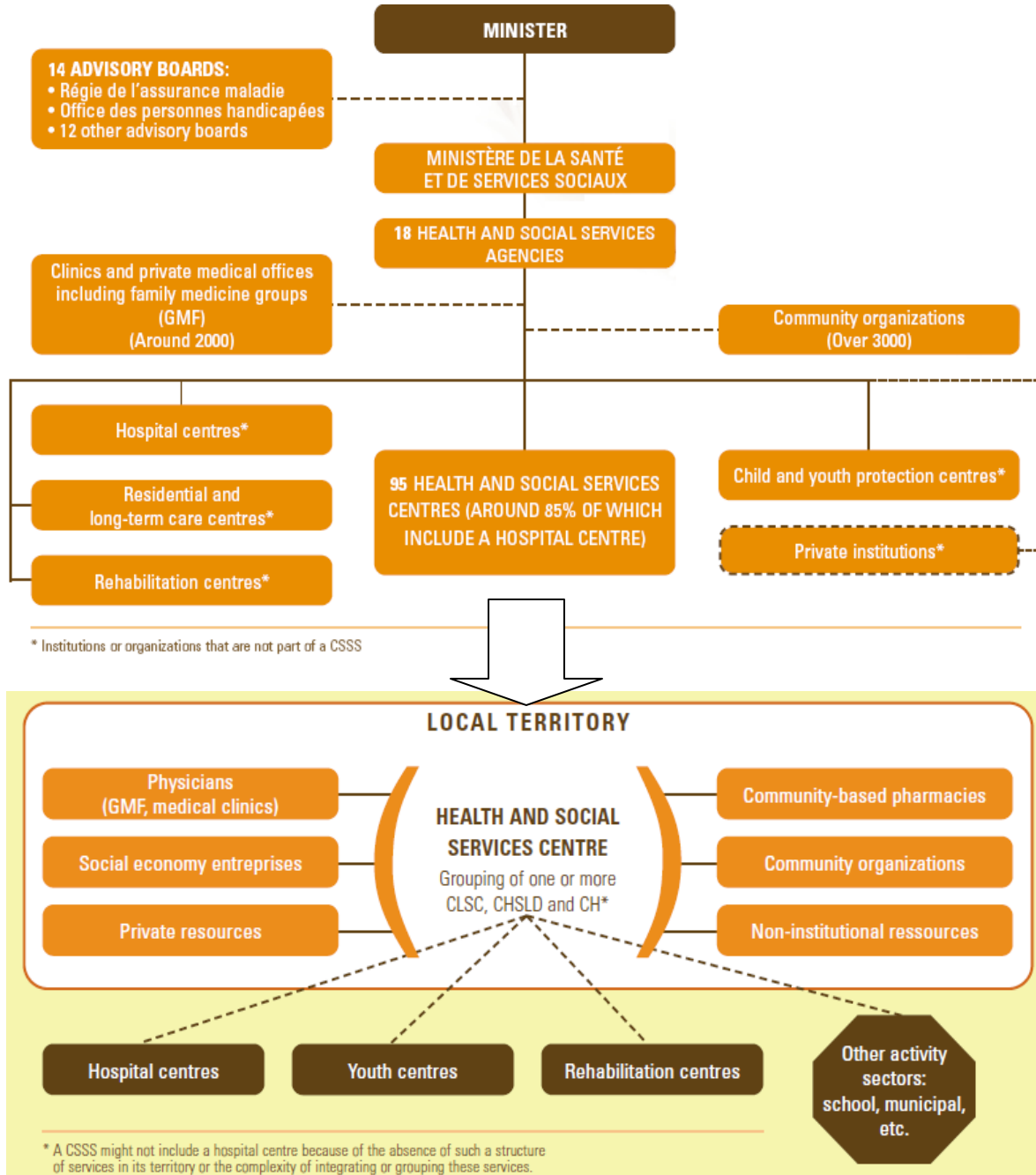
In December 2003, the provincial government adopted the "Law on agencies of development of local networks of health and social services." This law gave the agencies the responsibility to create a new type of organisation of the services in each region based

on the local network of services (RLS). Therefore, at the local level, we find local networks of health and social services which pull together all health providers including family doctors. The goal is to develop shared responsibility towards the population of the health region. The center of health and social services (CSSS: Centre de Santé et de Services Sociaux) acts as a hub for the local network. It offers an integrated system of services and warrants access, care, follow-up, and coordination of the services to the population. The CSSS are born out of the fusion of the old local centers of community services (CLSC: Centre Locaux de Services Communautaires), the center of housing and long term care (CHSLD: Centre d'Hébergement et de Soins de Longue Durée), and in most cases also a Hospital (CH: Centre Hospitalier).

The CSSS provides to the population of their territory preventive health services, as well as evaluation, diagnosis, treatment, rehabilitation, and institutional support for public housing. The CSSS coordinate the services offered by all health providers operating within the limits of their local territory. These centers also provide general and specialized hospital services. The model is based on the principal that consist in offering primary services in the proximity of the patient living environment. Those services include services of public health, and setting mechanisms for orientation and follow-up that aim to ensure access to specialized services. This holistic approach addresses all the needs for health care and social services and facilitates the navigation of the health care system, particularly by vulnerable sub-populations such as: those living with chronic diseases, the terminally ill, and elderly dependent persons. Ninety five CSSS provide such services to the local networks of social and health services (RLS) in Quebec. Figure 1 illustrates the Quebec's health care system and Figure 2 provides a reference map for the Quebec's 18 health regions.



**Figure 1**  
**Quebec's social services and health care organizations formed into networks**



Source: Ministère de la santé et des services sociaux



### ***Population at risk and supply of healthcare***

Despite efforts to balance health care supply with the geographic distribution of the population, the system is hindered by the disproportionate distribution of health care providers through the health regions vis-à-vis the distribution of the population. This is especially true for family doctors who are concentrated in urban areas. Only less than 16 percent of family doctors and 2.4 percent of specialists were located in rural areas and small towns in Canada, while these areas were home to 21 percent of the Canadian population in 2004 (Pong and Pitblado, 2006). Overall, only 9.4 percent of all physicians practice in rural areas where they serve 21 percent of Canada's population.

Such regional disparities are even more acute in Quebec. Table 1 provides a snapshot of the distribution of the total and the elderly population in Quebec, and table 2 provides recent indicators of the distribution of health care providers by health region. Three health regions (Montreal, Monteregie, and Quebec) are home to more than half the province's total population, and the region of Montreal alone is home to a Quarter of the total population. It is also home to more than a Quarter of the province's elderly population. Unbiased reading of table 1 and table 2 requires special attention to those under-populated health regions (population less than 100,000). These regions with inflated indicators put aside, the health regions of Montreal and of Quebec Capitale-Nationale are home to the highest concentration of health providers. About 36 percent of all general practitioners are located in these two health regions alone, and the ratios of the nurses per 100,000 residents are the highest in the province. In 2006, every 1000 residents of Quebec Capitale-Nationale can count on more than 15 (15.05) nurses and on 3 (2.9) physicians to provide them with health care; the figures are comparable to that of Montreal's health region, 14.5 and 2.96 respectively. By contrast, residents of the Monteregie which is home to 18 percent of the province's total population can only count on less than seven nurses (7.2) and less than two physicians (1.475) to serve them. More discussion of the inter-regions disparities will follow in the second part of the paper.

**Table 1**  
**Distribution of Quebec's population by health regions**

Health Regions (HR)	2006 Total Population	2006 Population distribution	2006 Population 65 yrs old & older	2006 Distribution of Elderly Population	2001 Percent 65 yrs old & older	2006 Percent 65 yrs old & older	Difference 2001 - 2006 Percent
Bas-Saint-Laurent (01)	200,458	2.6%	33,817	3.2%	15	17	2
Saguenay-Lac-Saint-Jean (02)	274,186	3.6%	39,711	3.7%	13	15	2
Capitale-Nationale (03)	669,316	8.8%	102,624	9.6%	14	15	1
Mauricie et Centre-du-Québec (04)	484,466	6.4%	79,150	7.4%	15	16	1
Estrie (05)	302,901	4.0%	45,189	4.2%	14	15	1
Montréal (06)	1,894,575	24.9%	287,971	26.9%	15	15	0
Outaouais (07)	345,464	4.5%	38,822	3.6%	10	11	1
Abitibi-Témiscamingue (08)	142,974	1.9%	18,345	1.7%	11	13	1
Côte-Nord (09)	94,813	1.2%	11,194	1.0%	10	12	2
Nord-du-Québec (10)	14,999	0.2%	1,143	0.1%	5	8	2
Gaspésie-Iles-de-la-Madeleine (11)	94,681	1.2%	16,901	1.6%	16	18	2
Chaudière-Appalaches (12)	395,099	5.2%	55,702	5.2%	13	14	1
Laval (13)	368,503	4.8%	53,011	5.0%	13	14	1
Lanaudière (14)	419,207	5.5%	50,168	4.7%	11	12	1
Laurentides (15)	512,539	6.7%	61,509	5.7%	11	12	1
Montérégie (16)	1,364,287	17.9%	173,711	16.2%	11	13	1
Nunavik (17)	10,497	0.1%	312	0.0%	3	3	0
Terres-Cries-de-la-Baie-James (18)	14,118	0.2%	641	0.1%	4	5	0
All of Quebec	7,603,083	100%	1,069,921	100%	13	14	1

**Table 2**  
**Distribution of Quebec's medical human resources by health regions**

Health Regions (HR)	2006 General Practitioner (GP) Number	2006 Distribution of the GPs in the HR	2006 GPs per 100 000 residents	2006 Physicians - total per 100 000 residents	2006 Nurses* per 100 000 residents (E.T.P.)**
01 Bas-Saint-Laurent	241	3.1%	120	216	1,260
02 Saguenay-Lac-Saint-Jean	280	3.6%	102	182	1,116
03 Capitale-Nationale	838	10.9%	125	285	1,503
04 Mauricie et Centre-du-Québec	428	5.6%	88	160	1,044
05 Estrie	354	4.6%	117	246	1,248
06 Montréal	1949	25.4%	103	296	1,445
07 Outaouais	310	4.0%	90	148	819
08 Abitibi-Témiscamingue	171	2.2%	120	209	1,168
09 Côte-Nord	149	1.9%	157	229	1,102
10 Nord-du-Québec	38	0.5%	253	287	1,220
11 Gaspésie-Iles-de-la-Madeleine	172	2.2%	182	278	1,352
12 Chaudière-Appalaches	388	5.0%	98	162	970
13 Laval	314	4.1%	85	145	703
14 Lanaudière	338	4.4%	81	135	730
15 Laurentides	454	5.9%	89	136	752
16 Montérégie	1179	15.3%	86	147	723
17 Nunavik	36	0.5%	343	381	2,163
18 Terres-Cries-de-la-Baie-James	46	0.6%	326	326	1,077
All of Quebec	7685	100%	101	208	1,084

**Notes:** \*includes auxiliary nurses and beneficiary attendants

\*\* « Équivalent Temps Plein »

Data source : Éco-Santé 2008

## **HEALTH CARE NEEDS IN QUEBEC'S ELDERLY**

In this section we first examine regional disparities in the elderly's potential needs (Figures 3 to 10). We then compare the characteristics of Quebec's elderly with those of the neighbouring province of Ontario, and those of the rest of Canada (Figures 11, 12, and 13A to 13D).

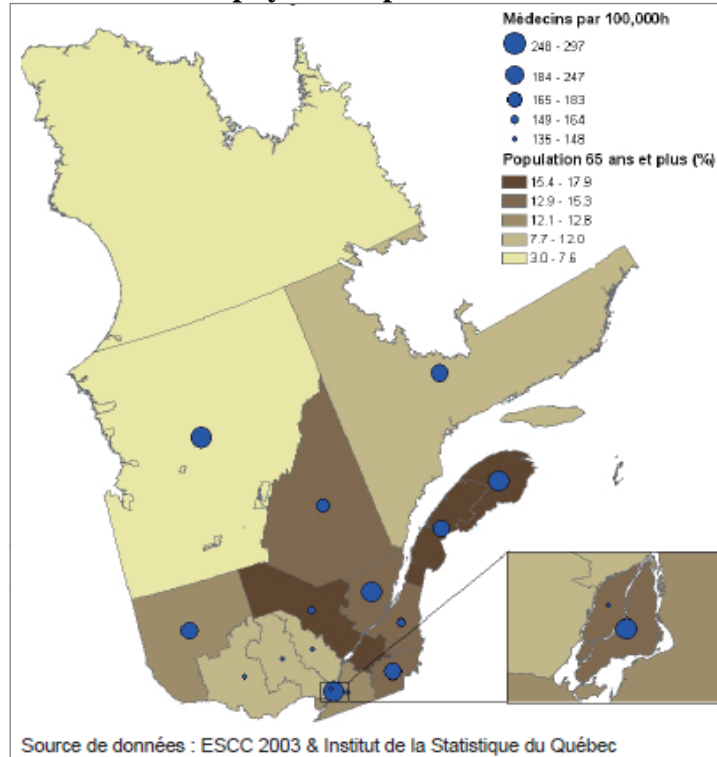
### ***Disparities within Quebec***

#### **Physicians and community health care**

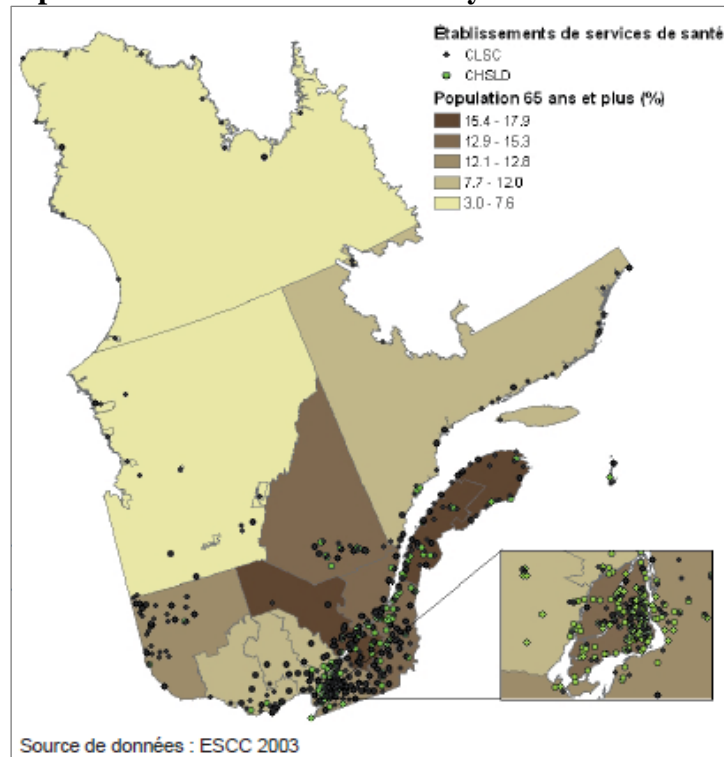
The ratios of physicians per 100,000 residents are comparatively lower in the health regions contiguous to Montreal and to Quebec Capitale-Nationale; this is true even for the regions of Laval and Mauricie-Centre-du-Québec where the proportions of elderly are two of the highest in the province. Figure 3 shows the concentration of people 65 years old and older and the ratio of physicians per 100,000 populations (Figure 3).

Another way to characterize the distribution of health services is to look at the spatial distribution of the CLSCs and CHSLDs, two types of facilities which deal directly with the elderly population. The CLSC is one of the main entrances to the healthcare system; it provides care and services to a well delimited territory for preventive and routine services. It is particularly relevant to the elderly because it provides home care. In 2009, 147 CLSCs served Quebec's 18 health regions. The CHSLDs on the other hand, provides more targeted services to dependent persons and the aged who need continuous social and medical care. The concentration of healthcare resources in urban areas applies to the community services provided through these two types of facilities too. Figure 4 shows how these points of services are cluttered in the metropolitan areas on a background of percent elderly (65 years old and older) by health region.

**Figure 3**  
**Number of physicians per 100000 residents**



**Figure 4**  
**Spatial distribution of community services facilities**



## Access to primary care

Health services research supports conclusive evidences that a healthcare system with a well performing primary healthcare services does more to improve the overall health of the population than does a system characterized by its technological prowess and the high level of sophistication of its specialized care; two characteristics that go hand in hand with higher costs of healthcare. But for a primary healthcare system to be “well performing”, it needs to be efficient and just. Universality, equity, and public administration are the core principals that guided the evolution of Canada’s health care system since its inception. Access to social and health services is warranted to all by the force of law. Nonetheless, the universal access was gradually built through the contemporary history of Canada to reach its present state.

Two public regimes allow all to obtain hospital and medical services free of charges; the hospital insurance which took place since 1961, and the treatment insurance since 1971. In 1997, the prescription insurance was implemented (RGAM: Régime Général d’Assurance Médicaments). This is a mixed coverage resulting from the partnership of the state with private insurances. Despite this comprehensive coverage, some still fall between the cracks of the system and fail to obtain care when needed. Figure 5 contrasts the health regions using the proportions of elderly who reported unmet needs. For example, the health regions of Quebec Capitale-Nationale, Chaudière-Appalaches, Laurentides, and Estrie have the lowest proportions of elderly with unmet needs in contrast with the regions surrounding Montreal: Lanaudière, Montérégie, and Abitibi-Témiscamingue wherein the proportion of elderly with unmet needs is markedly higher.

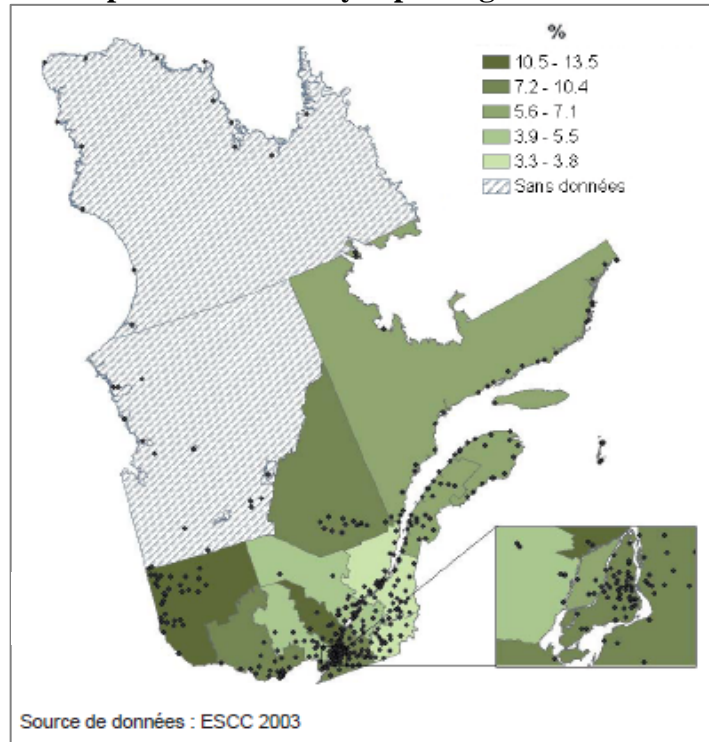
The elderly residents of Abitibi-Témiscamingue, Côte-Nord, Montreal and Laurentides are disadvantaged with regard to access to a regular family doctor even if the ratios of physicians per 100000 residents are high. The difference is the more significant when these regions are compared to those of Saguenay-Lac-St-Jean, Bas-St-Laurent<sup>1</sup> et Chaudière-Appalaches (Figure 6).

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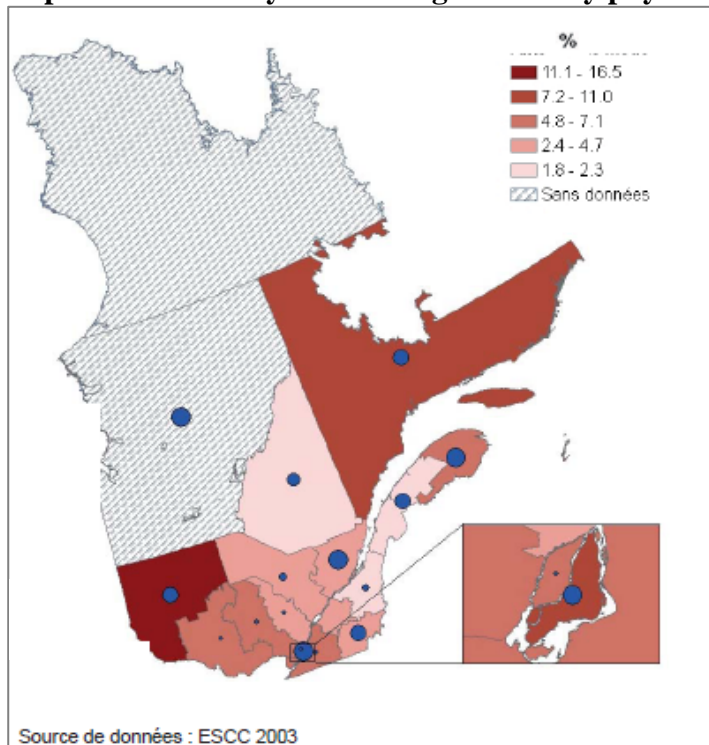
<sup>1</sup> The proportion estimated does not meet the recommendation of Statistics Canada for a conclusive survey analysis.



**Figure 5**  
**Proportions of elderly reporting unmet needs**



**Figure 6**  
**Proportion of elderly without regular family physician**

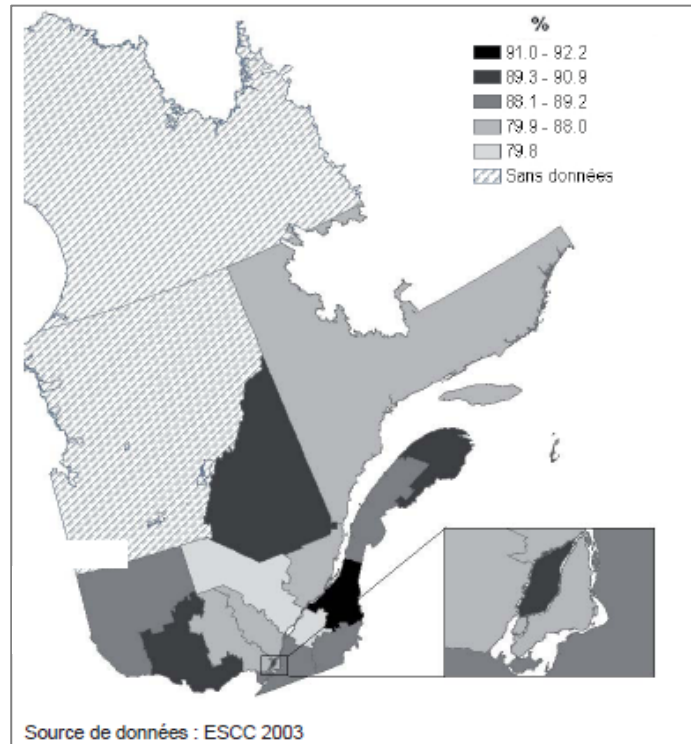


### **Self-rated health**

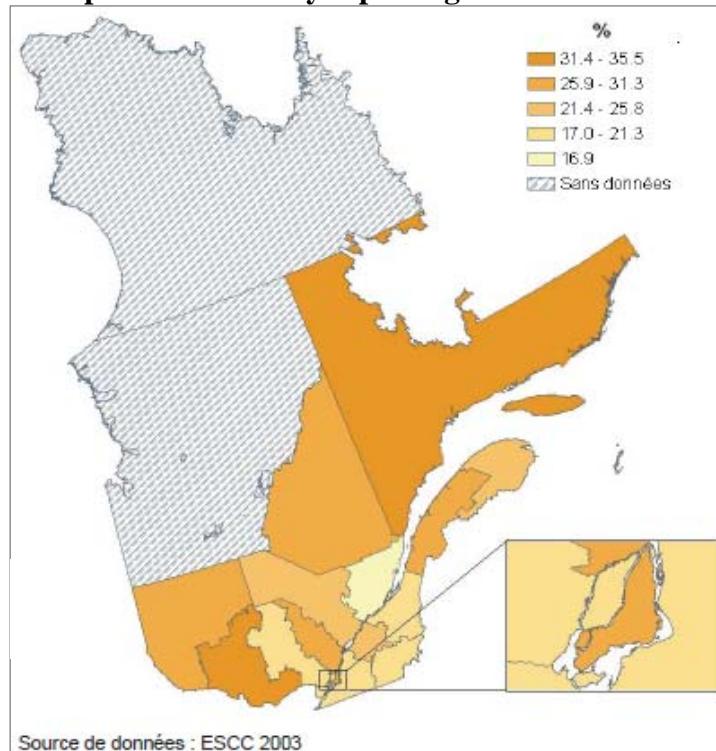
The medical literature sustains that self-rated health provides high precision indicator about individual health even when compared to clinical assessment. Since the health status is associated with healthcare needs, it ought to be an important determinant of health services utilisation. There is no evident pattern of the spatial distribution of the prevalence of chronic conditions as measured by the self-report of at least one chronic health condition in the elderly. Nonetheless, the elderly in the Mauricie-Centre-du-Québec health region enjoy the lowest prevalence of chronic conditions compared to the elderly of the Outaouais, Chaudière-Appalaches, Laval and that of Saguenay-Lac-St-Jean (figure 7), where the prevalence is a significantly higher.

It is also the elderly living in the health region of the Capitale-Nationale who enjoy the lowest proportion of respondents reporting a fair to bad health status, followed by Laval. The difference between these proportions on one hand, and those of Montréal, Outaouais, and Côte-Nord, on the other hand, is statistically significant (figure 8). Compared to all the respondents of the province, the elderly of the health region of Quebec Capitale-Nationale stand out by having the lowest proportion of persons who reported poor to fair health status. On the other hand, the region of Outaouais is the only health region which had a higher proportion of elderly who reported poor to fair health status higher than the province's average.

**Figure7**  
**Proportion of elderly reporting at least one chronic health condition**



**Figure8**  
**Proportion of elderly reporting bad to fair health**



## Activity limitations

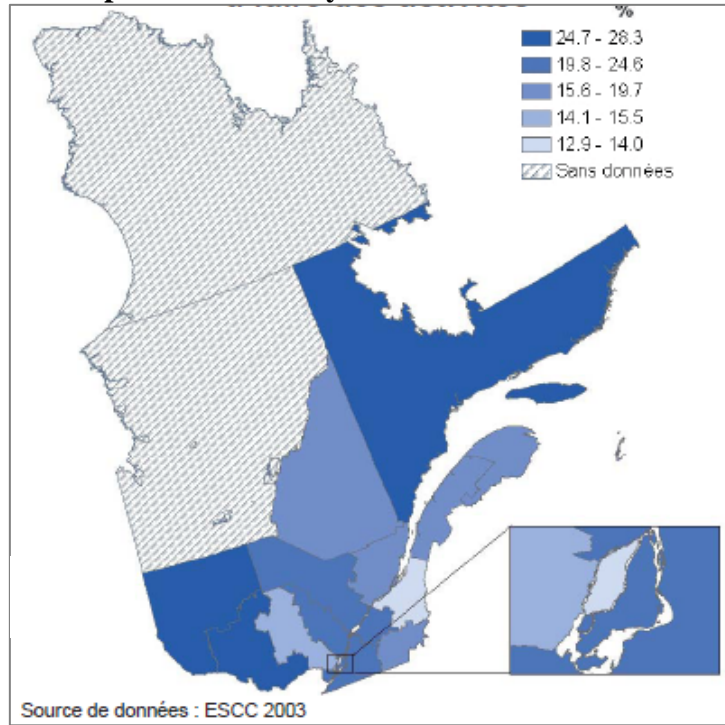
As mentioned previously, in Quebec, social and health services are integrated under the single roof of the CSSS. This integrated community services offer the advantage of taking care of all the elderly's healthcare needs including the needs generated by functional limitations.

Functional limitations are defined in the literature as those difficulties to accomplish some activities needed for a normal daily living. In general, functional limitations develop with aging. Two types of functional limitations are commonly used to characterize the severity of health conditions in the elderly: (1) limitations in activities of daily living (ADL) and (2) limitations in instrumental activities of daily living (IADL). We focus here on the first type of activities, such as *shopping*, which the respondent is accustomed to accomplish but at some point they weren't able to perform as they used to because of a health condition they experienced during a substantial period of time prior to the time of the survey.

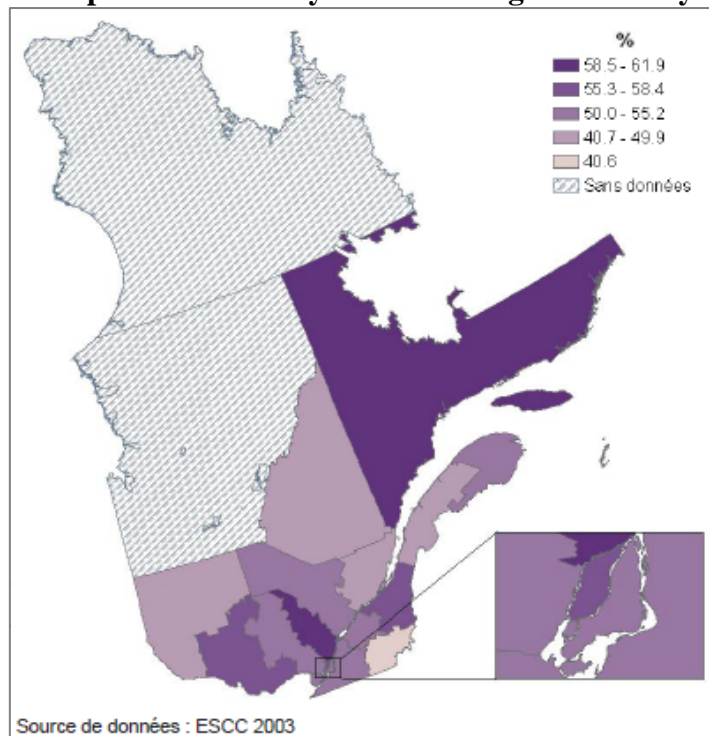
We mapped the proportion of elderly reporting activity limitations (Figure 9) to contrast the health regions on the basis of this important indicator. Where the data are available, there are noticeable disparities going from simple to double from the lowest class to the highest. In particular, these differences are statistically significant when we compare the regions of Laval and Chaudière-Appalaches with the regions of Montreal and Outaouais.

Since morbid overweight is one of the major causes of the prevalence of the second type of functional limitations (IADL), looking at the distribution of obesity is also relevant to assessment of healthcare needs. The spatial distribution of the prevalence of obesity (Figure 10) is also characterized by statistically significant difference between the region of Estrie and four other high prevalence regions: Côte-Nord, Outaouais, Lanaudière and Laval.

**Figure 9**  
**Proportion of elderly with activities limitations**



**Figure10**  
**Proportion of elderly with overweight or obesity**

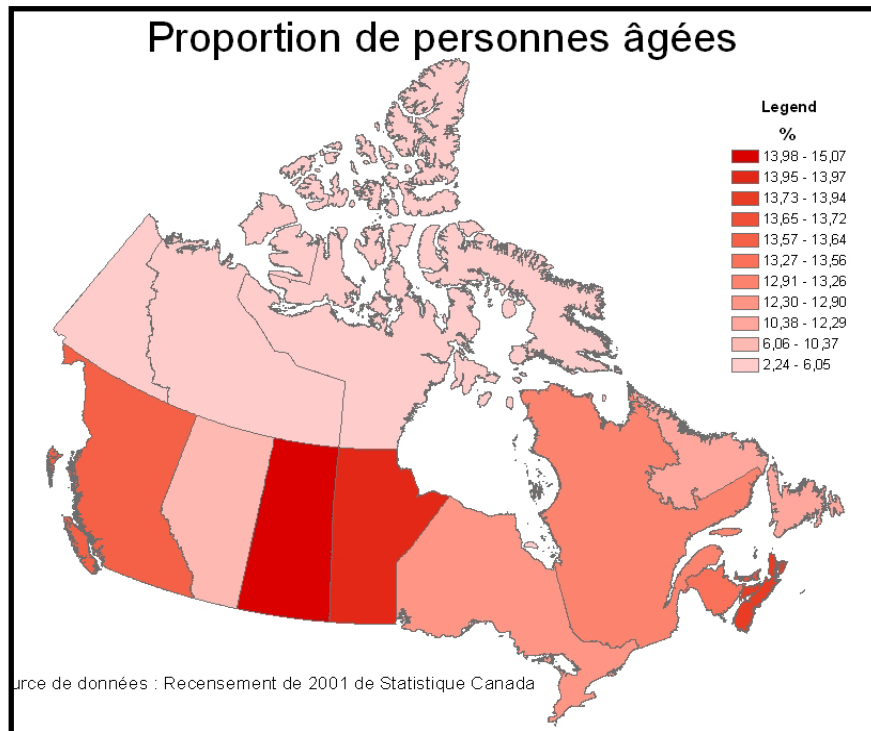


### *Quebec within Canada*

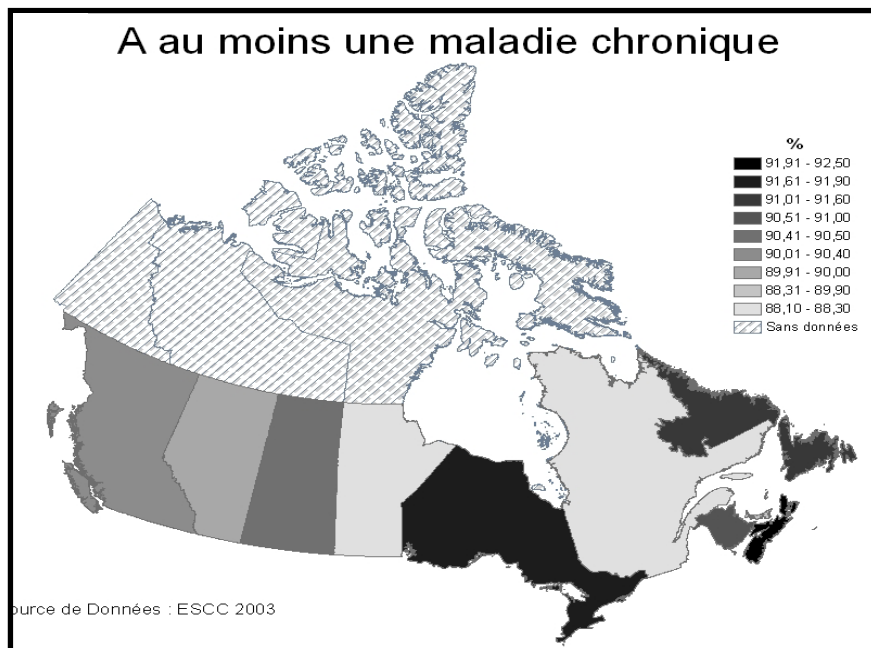
A correct appreciation of the results at the province level calls for comparison to the situation in the other provinces. We summarily compare Quebec to neighbouring Ontario, and to the rest of Canada with regard to the proportion of elderly in the population, the prevalence of limitations of activities, the proportion of elderly living alone, the prevalence of chronic health conditions, and access to a family doctor.

The proportion of elderly is moderately higher in Quebec's population than that in Ontario but it is lower than that of Manitoba, Saskatchewan, British Columbia, and Nova Scotia (Figure 11). Nonetheless, the prevalence rate in Quebec's elderly of at least one chronic health condition is significantly lower than in the elderly of Nova Scotia, and of Ontario (Figure 12).

**Figure 11**  
**Percent elderly in Canada's provinces**



**Figure 12**  
**Percent who reported at least one chronic health condition**



### **Difficulties with current activities**

Compared to Ontario and to the rest of Canada (Figure 13A), the difference in the prevalence of self-reported limitations in activities is significant ( $p \leq 0.05$ ) in women to the advantage of Quebec. The difference in men is even higher to the advantage of Quebec. However, it is statistically significant between Quebec and the rest of Canada but not between Quebec and its neighbouring province of Ontario.

### **Elderly living alone**

Social isolation of the elderly is a major problem that all aging societies face and Quebec is no exception. Measures taken by various social actors from volunteer groups organized in non-profit organizations to the more structured ones taken by the public health services attempt to respond to this need. Figure 13B compares Quebec to Ontario and to the rest of Canada. Quebec's proportion of elderly women living alone is higher than that of the rest of Canada and even more than that of Ontario, and the difference is statistically significant ( $p < 0.05$ ). Quebec compares favorably to the rest of Canada with a lower proportion of elderly men living alone, but compares unfavorably to Ontario although this time the difference is not statistically significant.

### **Chronic health conditions**

As paradoxical as this might seem, the prevalence of chronic diseases is in the same time an indicator of the society's overall wellbeing and, in the mean time, it is an indicator of health deterioration in the elderly subpopulation. It is an indicator of wellbeing because increase in the prevalence of chronic disease and its concentration in the higher age spans is a consequence of a better longevity which is an indicator of overall improvement of the conditions of life. Such improvement results into a concentration of chronic diseases at higher ages, a phenomenon known to demographers as the rectangularisation of the survival curve.

We compare the prevalence of chronic health conditions measured by the self-report of at least one chronic condition at the time of the survey. Better understanding of the distribution of chronic health conditions in a comparative perspective requires more in-

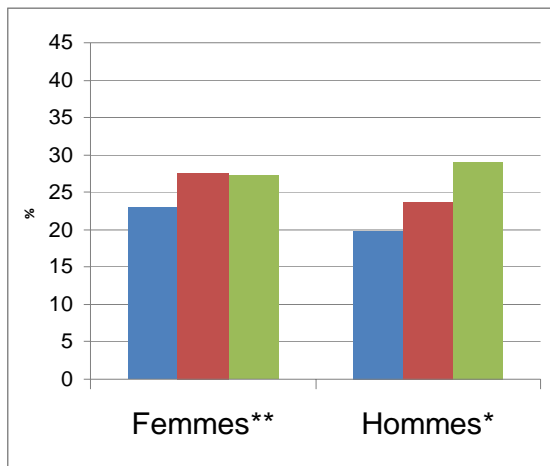


depth analysis which account of the differentials in life expectancy and in healthy life expectancies. The prevalence of at least one chronic condition is lower for both males and females among Quebec's elderly comparatively to that of Ontario and the rest of Canada; a more important difference shows among men (Figure 12C). The differences are statistically significant at the  $p < 0.01$  level.

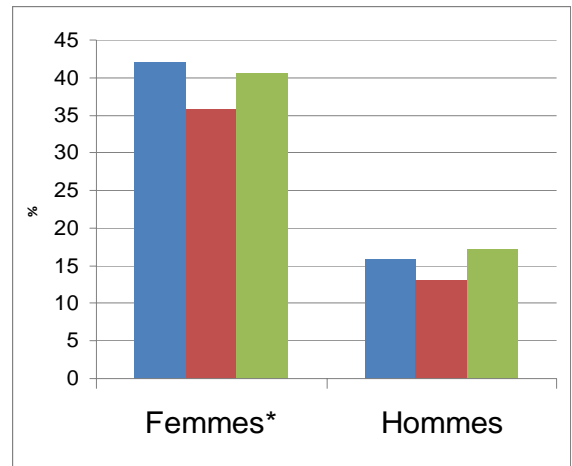
### **Access to a regular family doctor**

Access to a family practitioner constitutes the angular stone of primary healthcare system; it is thus a particularly important factor in the general improvement of public health (Eykes, Birch and Newbold 1995). Compared to Ontario and the rest of Canada, the elderly women and men in Quebec are a little disadvantaged as for the access to a family practitioner. Again, this disadvantage is more important in men. The differences are statistically significant at the  $p < 0.05$  confidence level (Figure 12D).

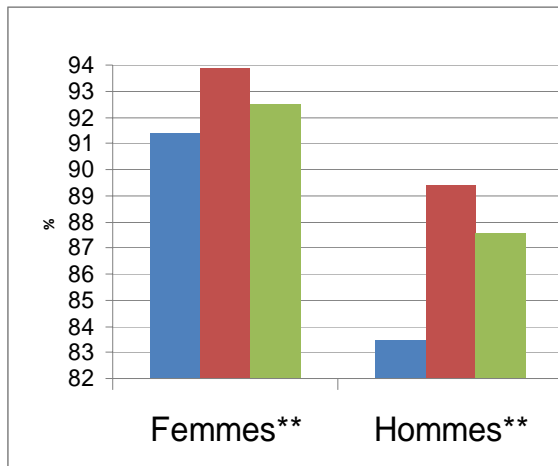
**Figure 13.A**  
Percent reporting limitations of activities



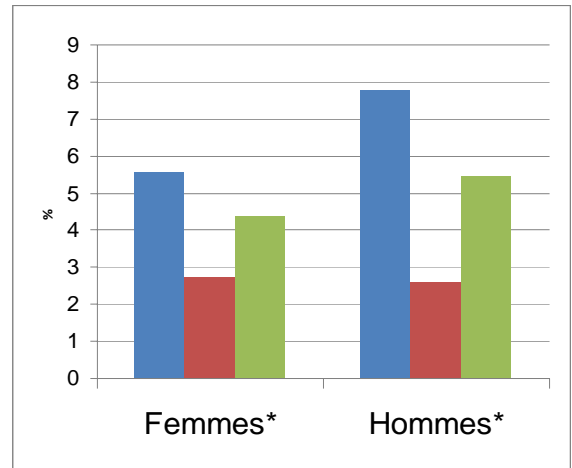
**Figure 13.B**  
Percent of elderly living alone



**Figure 13.C**  
Percent of elderly with at least one chronic health condition



**Figure 13.D**  
Percent of elderly without a regular doctor



■ Québec ■ Ontario ■ Ailleurs au Canada

\*\*Differences significant at the  $p < 0.05$  level; compared to Ontario AND the rest of Canada

\*\*Differences significant at the  $p < 0.05$  level; compared to Ontario OR the rest of Canada

## CONCLUSION

An aging population leads necessarily to an increase in the needs for healthcare. We examined the characteristics of Quebec's elderly population in order to highlight their needs for care and, indirectly, contrast those specific needs with the available resources. Most of the healthcare resources in Montreal metropolitan area and its neighbouring areas are concentrated in central Montreal.

The results show significant disparities in access to primary healthcare services, in particular in access to a regular family doctor. However, we do not find a particular pattern of spatial distribution of the prevalence of chronic health conditions in the elderly. This prevalence is based on self-reporting of at least one chronic condition. Nonetheless, there are significant disparities in the prevalence of activities limitations and in that of morbid obesity. To sum up, the elderly population of the health regions of Abitibi-Témiscamingue, Côte-Nord, Outaouais, and Mauricie-Centre-du-Québec are characterised by potential higher needs for healthcare compared to the health regions of Estrie and Quebec Capitale-Nationale.

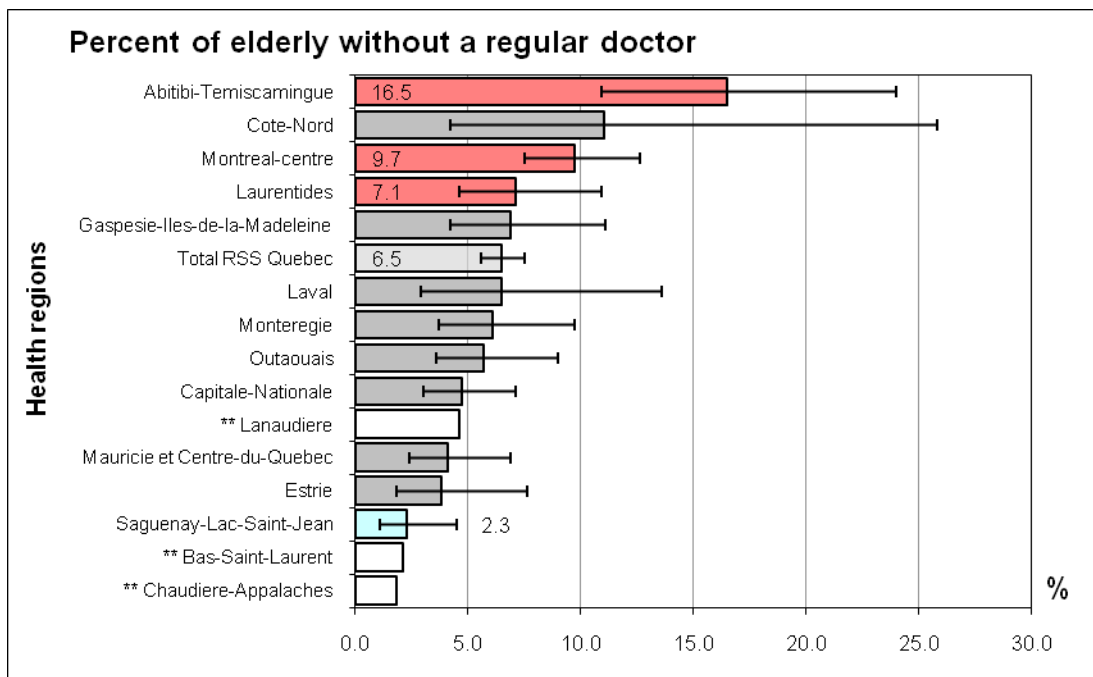
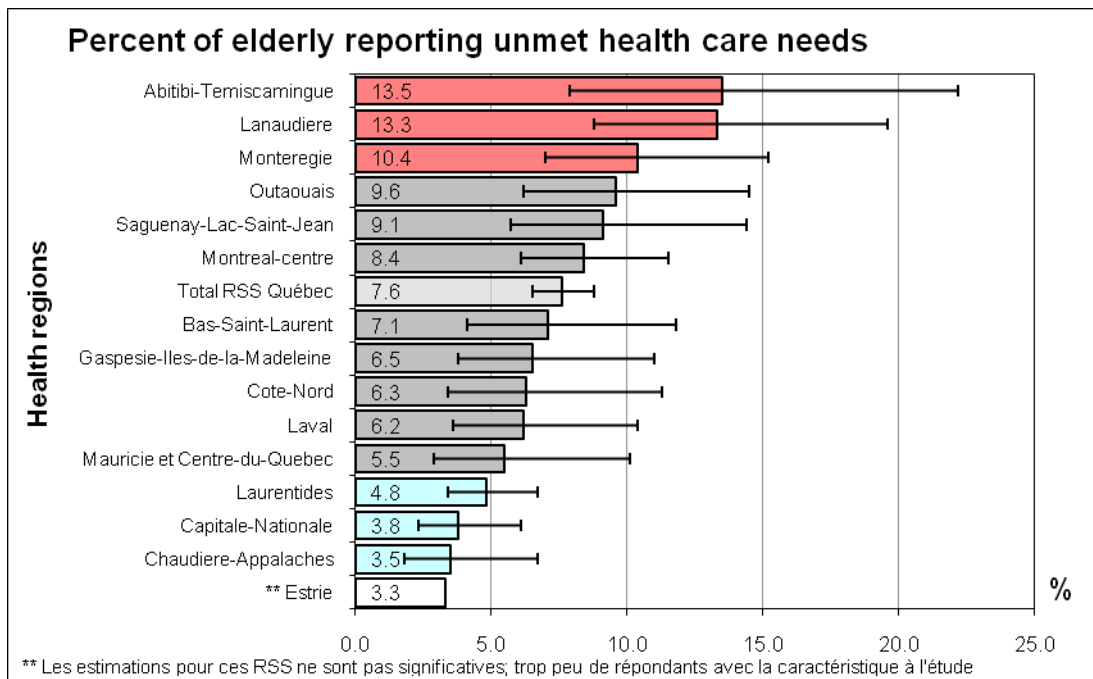
Compared to Ontario and to the rest of Canada, Quebec's elderly suffers a low access to a regular family doctor. Still the prevalence of chronic conditions and of limitations of activities is comparatively lower in Quebec's elderly.

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## APPENDIX



\*\*Les estimations pour ces RSS ne sont pas significatives; trop peu de répondants avec la caractéristique à l'étude

