

BASIC LIVING EXPENSES FOR THE CANADIAN ELDERLY

Bonnie-Jeanne MacDonald Doug Andrews
Robert L. Brown

Abstract

Our research undertakes to determine the basic living expenses required by Canadian seniors living in different circumstances in terms of age, gender, city of residence, household size, homeowner or renter, means of transportation and health status. The paper develops required expenses for food, shelter, health care, transportation and miscellaneous. The research identifies the typical expenses of seniors in each of these categories. Using 2001 as our base year, we follow the US Elder Standard to build an elderly threshold for Halifax, Montreal, Toronto, Calgary and Vancouver.

The research is unique because it is the first Canadian study of absolute basic living expenses tailored to seniors, rather than simply to adults in general. This information is important to seniors, prospective retirees, financial planners, policy makers and actuaries in assessing the minimum level of income required in retirement and the adequacy of savings and income security programs.

Our conclusions suggest that individual circumstances, rather than age, are the primary drivers in determining the cost of these basic expenses. Seniors are a diverse group, particularly with respect to health, so it is important that seniors and financial planners do not blindly rely on a fixed replacement ratio or universal level of income when projecting the level of finances needed to retire. This research enables the reader to determine the threshold that is suited to a senior's general circumstances.

Keywords: Retirement Income Adequacy; Absolute Measure; Elder Standard; Canadian Data.

1 INTRODUCTION

This study resulted from work previously done by the Canadian Institute of Actuaries to see if Canadians were saving enough for retirement. Their study concluded that two-thirds of Canadians were not saving enough for retirement. The question arose, however, as to how to measure the cost of basic needs in retirement. This paper is the work product of a request by the Canadian Institute of Actuaries to determine basic living expenses for the Canadian elderly.

To establish what level of income is considered adequate for Canadians to retire on, we could respond using a *relative* approach or an *absolute* approach. For example, to investigate the risk of inadequate retirement savings in the US using a relative approach, Munnell (2007) projected the replacement rates of a representative sample of US households (that is, the projected retirement income as a percent of pre-retirement income) and compared them to target rates, which varied by household type. This approach is particularly beneficial from the individual's perspective since it emphasizes the importance of standard of living preservation as a worker enters retirement. At a social level, however, there is a desire that everyone has met a particular standard in order to alleviate elderly poverty. Hence, a second approach is to compare projected retirement incomes to an income threshold that is designed to meet the basic living expenses in retirement. The aim of this paper is to measure appropriate thresholds for Canadian seniors living in diverse circumstances based on absolute levels rather than a relative approach. We discuss the benefits and shortcomings of absolute and relative measures in the next section.

2 LITERATURE REVIEW

This section commences by discussing the past, current and future financial state of Canadian seniors. Thereafter, we explain the two distinct methodologies behind building a poverty measure and explore the most popular poverty measures used in Canada, including their benefits and shortcomings. We finish by discussing the potential changes in basic needs that could occur after retirement and with advancing age.

2.1 Poverty Among Seniors in Canada

There has been positive progress on the alleviation of poverty among Canadian seniors on a historical basis, an international basis and relative to non-seniors in Canada. Over the past 35 years, poverty among seniors in Canada has been decreasing dramatically and is currently fluctuating around 6%¹. Veall showed that it has become low not only by historical standards, but also by current international standards. Numerous other authors have arrived at similar conclusions confirming the achievement of the Canadian retirement security programs. They have also provided evidence of the relatively improved financial state of Canadian seniors as compared to non-seniors. Their studies were nicely summarized in Baker and Gunderson (2005).

The Canadian social security programs consist of Old Age Security (OAS), the Guaranteed Income Supplement (GIS) for low-income earners, and the Canada/Quebec Pension Plans (C/QPP). These benefits were designed to provide a modest base upon which Canadians can build their retirement income². LaRoche-Cote et al. (2008) found, using data from 1983 to 1998 for the cohorts aged 54 to 56, that the CPP, GIS and OAS have historically provided stable benefits from year to year to each age group. They found that older beneficiaries have typically received more than \$6,000 from the combination of OAS and GIS and more than \$7,000 from CPP (in 2005 dollars). The main reasons behind the stability of the government provided income has been the lack of major policy changes and the indexation of the benefits to CPI. Given the stability of the Canadian social security programs, along with the maturation of employer pension plans and increasing pension benefits from private pension sources, LaRoche-Cote et al. ascertained that recent retirees are generally better off than previous cohorts. Turcotte and Schellenberg (2006) also commented on the overall improvement of retirement income in Canada, finding that the average after-tax income increased by 18% in real terms for senior couples and over 40% for singles between 1980 and 2003.

An OECD 2001 study found that Canada, along with several other sampled OECD countries, had been successful in forming policies such that retiring individuals from *all* income levels tend to maintain or even increase their standard of living at retirement. Brown and Prus (2007) also showed from Gini coefficients

¹This study was based on Veall (2007)'s Low-Income Measure, which we discuss below. In addition to this relative measure of poverty, Sarlo's (2001, 2006) absolute measure of poverty also showed a remarkable decline in overall poverty in Canada over the past 50 years, which includes a noteworthy decline over just the past 10 years (based on 2004 data).

²<http://www.hrsdc.gc.ca>

that Canada is among the best of the sampled OECD countries in reducing income inequality during old age³. They found a large shift of wealth from the richest to the poorest citizens within a system that focused on the alleviation of poverty.

Upon calculating his Basic Needs Poverty Line, Sarlo (2001) established that the Canadian federal and provincial financial support programs ensured that no individual falls below this threshold. Ruggeri and Bluck (1994) also found that government financial support exceeded their developed poverty line in nearly all provinces. As for the many senior-led households who were below the poverty line, Ruggeri and Bluck postulated that these seniors did not benefit from government programs, either from ignorance or desire, as well as the possibility that some were new immigrants not yet eligible for the benefits. Sarlo also noted the risk of income under-reporting. After we present a threshold tailored to Canadian seniors, we will examine whether the Canadian support system does indeed cover the basic necessities as Sarlo, Ruggeri and Bluck suggest.

In addition to quantitative studies of retirement income adequacy, there have also been qualitative investigations that also reported a generally good account of the financial condition of the elderly. Alan et al. (2007) assessed the responses of Canadian retirees to Statistics Canada surveys of financial satisfaction and found that they suggested that retiring Canadians have adequate financial resources, with the exception of those who retired involuntarily as a result of poor health.

In the US, Munnell and Soto (2005) also concluded that retiring US citizens today are in “pretty good shape” after examining replacement rates of current retirees. Unfortunately, they projected that retirement income adequacy will decline as a result of anticipated lower replacement rates from Social Security and less certain income from employer pensions. This last point is likely because of the well-known US trend towards defined contribution pension plans.

In Canada, the C/QPP is not scheduled for changes and the trend from defined benefit to defined contribution plans, while being experienced among employer pension plans, has been far less dramatic than in the US (Brown, 2001). As we enter a time of huge demographic shift owing to the baby-boomers transition into retirement, the continuation of the general adequacy of pensions is a growing concern. Baker and Gunderson (2005) postulated that the improvement that senior

³Hamilton (2001) felt, however, that the Gini coefficient has been limited by its use of after-tax income as a measure of economic well-being as opposed to actual consumption, which he equated to total income less tax, mortgage payments, savings, gifts, occupational dues, day-care costs, and the cost of providing for children. Comparing ratios of top to bottom quintile averages for both consumption and after-tax income, Hamilton argued that income inequality is more severe among senior couples than non-senior.

poverty has experienced may have peaked, and could possibly deteriorate if the Canadian government increases the age of retirement or if employers cut back on pension benefits as a consequence of the growing costs associated with the larger number of retirees. Regardless, they concluded that the financial security of the Canadian elderly is unlikely to worsen given the increasing role of RRSPs as a source of income, the growing influence of the elderly on the political scene, and the recent climb of elderly participation in the workforce. The number of seniors in the workforce could accelerate with the widening ban on mandatory retirement.

2.2 Poverty Lines

Most measures of poverty count the number of people who fall below a poverty threshold. There are two methods of determining the poverty threshold - absolute and relative. An absolute indicator of poverty is the threshold of a household's essential goods and services that satisfies a minimum standard of living. Under the second approach, a relative threshold is determined by the circumstances of the surrounding population. For example, this approach considers income adequacy relative to the population's distribution of income, such as comparing each individual's income with a percentage of the median income of the collective. This type of measure is the most widely used approach in Canada (e.g., Statistics Canada Low Income Cutoffs or LICO). Sarlo (1996, 2001, 2006) made, however, a convincing argument of why poverty is an "absolute" state, signalling a lack of the necessities of life, and thus should not be calculated using relative measures. Sarlo explained that relative measures describe income inequality rather than deprivation, and should not be used as indicators of an adequate standard of living. The absolute poverty level measure is, however, commonly criticized as vague and subjective.

Currently, the "poverty lines" used in Canada are the Low Income Cutoffs (LICOs), the Low Income Measures (LIMs) and the Market Basket Measures (MBMs). Giles (2004) described the methodology of each of these measures. The first two are relative indicators of low income developed by Statistics Canada, while the last is an absolute indicator introduced in 2003 by Human Resources and Social Development Canada (HRSDC). LICO is commonly used when examining poverty over time, LIM for international poverty comparisons and MBM when assessing differences in the cost of living across Canada. These measures have numerous shortcomings when regarded as poverty lines. Sarlo (1996, 2001, 2006) gave a full account of their drawbacks. For example, he explained that the LICO, which is set at one-half of the adjusted median pre or post income tax income, has

been regarded as “unwieldy, arbitrary, purely relative, and unrelated to the actual costs of acquiring necessities”. He also felt that the MBM included items that are not basic necessities; that is, amenities whose absences do not put an individual into poverty. Veall (2007) discussed the shortcomings of using the below-LIM rate. He explained that the LIM itself is arbitrarily set at 50% of median income and that the LIM rate, being a pure count, does not account for the depth of poverty (that is, the distance below the LIM). Most importantly, Statistics Canada has repeatedly stated that LICO and LIM are not measures of poverty and it does not endorse their use as such. Rather, they are methods of identifying those whose incomes are lower than the average (Statistics Canada, 2004). HRSDC has made similar disclaimers regarding the MBM.

In addition to the controversy of the LICO, LIM and MBM, the role of income in assessing poverty has been widely critiqued. Hamilton (2001) displayed the limitations of income as a measure of economic well-being by illustrating the strange outcomes of the Statistics Canada measures for a make-believe country where all workers earn the same wage and the standard of living remains unchanged between working and retirement. Hamilton argued that using income to measure the economic well-being of the elderly is particularly misleading because, using the 1997 Survey of Consumer Spending, he found that the elderly consume a greater proportion of their income than do the non-elderly⁴. Sarlo (1996, 2001) also expounded on the many weaknesses in using income as an indicator of consumption such as the prevalence of unreported and under-reported income. He explained that the primary reason for an individual to under-report their income is to evade taxes, but there can be other motives such as not reporting income generated from illegal activities.

In addition to the MBM, Sarlo (1996) also calculated a Canadian absolute threshold of poverty. Using a market basket methodology, he designed a threshold that would satisfy the basic necessities of life and below which real deprivation is likely to occur. The resulting Basic Needs Poverty Line, however, was well below the other measures listed above and, consequently, was criticized as denoting “extreme poverty” (Osberg, 2007). Sarlo also estimated an income level at which an individual could enjoy a reasonable level of amenities, such as giving gifts, referred to as a “social comfort line”. According to Sarlo’s definition, once someone falls below the “social comfort line”, they would be considered near poor and those who fall below the Basic Needs Poverty Line are considered below poverty.

⁴With the exception of one-person households of the bottom income quintile. Hamilton’s definition of consumption was given earlier in a footnote.

Sarlo noted that his “social comfort line” was arbitrarily calculated as equaling twice the poverty line.

The National Council of Welfare (1999) published a discussion paper on poverty lines in Canada, with a particular focus on market basket approaches. They similarly calculated a “less statistical basket” as an alternative to the other available measures, in which some of the items were duplicates of the MBM while others were adjusted to reflect their recommendations on market basket poverty lines.

2.3 Age, Retirement and Basic Needs Spending

Our next concern is whether aging or retirement affects basic needs spending. Although the elderly and non-elderly share the same categories of needs (i.e., food, shelter, etc.), the extent of their need and its underlying cause could be dissimilar owing to their different life circumstances. For example, like the rest of the age groups, the elderly require adequate food and housing. Transportation serves, however, more as a tool of independence than as a means to commute to school or work. We begin by exploring the possible effects of age, then of retirement. Many of our findings are incorporated in the threshold assumptions, which we describe in the appendices.

First, with advancing years, a senior’s out-of-pocket costs of non-insured health care generally grows from covering general medical needs, such as prescription drugs and medical treatments, to include also the expense of home support for long-term care. Further, advancing age brings about an increase in health needs. Canada’s publicly funded health care system serves as an enormous benefit to seniors in dampening the severity of rising health costs. Health Canada (2001) measured that in 2000-2001, nearly half of all health expenditures were on behalf of seniors, despite seniors only making up 13% of the population. The Canadian Institute for Health Information (2007⁵) found that seniors (aged 65+) accounted for just over 44% of health expenditures in 2005 (15% for those between ages 65 and 74 and 29% for those aged 75+). Despite the substantial cost reduction from Canada’s health care system, medical out-of-pocket costs can be more of an issue for elders than non-elders. This is owing to a higher need for medical attention compounded with the lower likelihood of having insurance. For example, in 2003 only 22% of women aged 75+ were covered by dental insurance, in contrast to the 69% of women aged 25 to 54 (Turcotte and Schellenberg, 2006).

On the other hand, seniors have access to many price discounts, subsidies and

⁵Source: <http://secure.cihi.ca>

tax benefits. For federal income taxes, the level of personal exemption for a senior can be up to \$5,066⁶ higher than a non-elderly person as of 2006, the exact amount being contingent on income level. Moreover, all or part of this tax credit can be transferred to a spouse or common-law partner. There are also corresponding provincial and territorial tax credits. In addition, the first \$2,000 of pension income is eligible for a tax credit if the income source qualifies⁷. Low-income seniors can also benefit from property and sales tax credits. There exists other senior discount programs for goods and services, such as a 10% discount that a supplier sets on a particular day. Finally, seniors are more likely to own their home mortgage-free than any other age group, thus substantially reducing shelter costs. In 2001, 75.4% of senior households headed by someone aged 65-74 owned their home, and 80% of those households did so mortgage-free (Turcotte and Schellenberg, 2006). Compared to the past, Turcotte and Schellenberg (2006) also showed that the proportion of senior homeowners has grown while the proportion of senior renters has dwindled. Further details can be found in Appendix B.

Many studies show a decline in the overall spending of seniors compared to non-seniors, although the behavior of *basic needs* spending is not clear. Hamilton (2001) found that senior Canadian households consumed less than non-senior households, and their consumption reduced as they aged⁸. He found that the added consumption of dependent children on non-senior households did not fully explain the difference. Furthermore, owing to the large amounts of money that seniors saved or gave away (20% of after-tax income for couples and 10% for singles), he ascertained that what caused lower consumption was not financial constraints, but rather poor health, their desire to leave an inheritance, concern for future expenses and/or frugality. Hamilton (2001) noted the effects he observed could have been generational rather than age-related since his was not a longitudinal study. Indeed, Denton and Spencer (1988) found that tracking the incomes of a cohort as they age rather than looking at incomes in one particular year, as Hamilton did, resulted in a much lower rate of income decline. Alan et al. (2007) also found (using two expenditure surveys SHS⁹ 1998 and FAMEX 1992), the average dis-

⁶Source: www.cra.gc.ca

⁷For those aged 65+, nearly all pension income sources qualify except OAS, C/QPP and any foreign source pension that is exempt from Canadian income tax. Source: www.cra.gc.ca.

⁸As noted in a previous footnote, he defined consumption as total income less taxes, mortgage payment, savings, and money spent on others such as gifts or caring for dependents.

⁹The redesigned Survey of Household Spending (SHS) replaced the Statistics Canada Family Expenditure (FAMEX) surveys in 1997.

posable income and expenditure on nondurable consumption showed a substantial decline for the elderly.

We expect that retirement would bring about a change in spending patterns. One reason is that retirement effectively eliminates work-related expenses and the additional cost of eating away from home. The increase in leisure time could also positively or negatively affect spending. For example, food expenditures are normally lower since retired households engage in more household production; that is, they devote more time to food preparation at home (Brzozowski and Lu, 2006). On the other hand, more leisure time could lead to more recreation, such as costly vacations and other expensive activities. Since we are considering only basic needs, however, we do not assess these types of voluntary costs. If our study had moved beyond basic needs into general needs, then our task would have been more difficult since general needs are completely relative and cannot be defined objectively (Denton and Spencer, 1988).

The widely used life cycle model theorizes that consumption should be relatively constant before and after retirement. A behavior pattern that is commonly observed, however, is a large drop in spending at retirement. Hurd and Rohwedder (2004, 2005) provided an overview of the US and UK studies that have detected this expenditure pattern, and whose analyses have led to a “retirement consumption puzzle”. They noted that the common interpretation of the drop in consumption is that households are ill-prepared for retirement and are consequently forced to reduce consumption owing to budgetary constraints. Hurd and Rohwedder determined, however, that although there is a decline in consumption, they showed that less than half of the retirees reduced their spending after retirement and that this decline was generally anticipated. The difference was explained by the subtraction of work-related expenses and the ability of retired persons to substitute home-production for market-purchased goods and services. Furthermore, the above-average declines in spending appeared to occur when workers were obliged to retire on insufficient income owing to their poor health (one-third of retirees stated that health was an important reason for retirement). These factors - the cost-savings of greater leisure time, the cessation of work-related expenses and a lower budget owing to the unexpected early retirement of the less healthy - are also likely explanations for the decline in consumption and spending observed in Canadian data. In fact, McDonald et al. (2000) observed, from Canadian data, the negative impact of unexpected retirement on retirement income. They considered involuntary retirement as that which occurs as a result of forced retirement by company policies, poor health, job displacement, or a response to caregiving needs of another family member.

In a recent simulation study, Denton, Mountain, and Spencer (2002) investigated the budget allocation patterns of older Canadian couples and the effects of age. Relying on six consecutive FAMEX surveys from 1969-1996¹⁰, they fitted and simulated a consumer-demand model of the expenditures of older households. Their simulations suggested that advancing age, and the associated changes in taste, plays a minor role in changes in spending patterns after retirement. They found that declines in income after retirement are primarily responsible for changes in spending patterns. If income does not drop, their simulations ascertained that the spending in each expenditure category would remain relatively the same.

3 OBJECTIVES

Among the market basket measures listed previously - the MBM, Sarlo's Basic Needs Poverty Line and the National Council of Welfare's basket- none were tailored to the elderly. The National Council of Welfare chose a reference family of four, living in Vancouver during 1996, to illustrate the cost of each item in their basket. Sarlo and the MBM calculated the cost of a reference family (two adults and two children), and then applied an equivalence scale to determine the cost for other family structures. The categories in the equivalence scale do not include seniors, only adults and children. The needs of the elderly are, thus, treated as those of a non-elderly adult. Elders are likely to have, however, different needs and consequently different income requirements to meet their necessities of life, as discussed in the previous section.

In the US, Russell et al. (2006) developed a new measure that suits our purposes entitled the Elder Economic Security Standard (Elder Standard). This standard measures the absolute cost for US elders to provide for their basic needs, taking into account regional differences and various life circumstances (e.g., different housing schemes). The Wider Opportunities for Women (WOW) and the Gerontology Institute (GI) are national research partners in the "Elder Economic Security Initiative". The Elder Standard answers the questions "What is an adequate income for older adult households to age in place? How does it vary according to their life circumstances: whether they are living alone or with a spouse; rent or own their home; drive a car or use other transportation? How do elders' living costs change as their health status and life circumstances change? What happens

¹⁰This study was not, however, longitudinal. Wishing to include durables in addition to non-durables and services, they opted to group the data according to age and region to avoid the complications associated with including the durables' data.

if they need long-term care to keep living at home?” Although the standard has only been applied to US data, in particular Massachusetts and the Boston area, a recent paper by Russell et al. (2006) was written to provide a methodology to determine the minimum standard in any US geographic area. Any reference to the Elder Standard in this paper refers to the Russell report. Using their framework, we use corresponding Canadian data to produce standards for various cities across Canada. To aid in finding Canadian data sources, we use the market basket approaches of Sarlo’s Basic Needs Poverty Line, the HRSDC MBM and the National Council of Welfare basket as a guide.

The aim of the Elder Standard is to promote a measure that provides economic security for elders without compromising their independence in the community. The measure is not, therefore, one of abject poverty. Likewise, we believe that the retirement income target for our purposes should not be a poverty measure per se since, following the methodology of Sarlo (1996, 2001), households with incomes just below this line cannot make ends meet and are thus forced to rely on public subsidies to meet basic needs. Rather, we aim to measure a reasonable, but still low-budget, standard of living threshold for the elderly. Achieving a slightly higher measure than abject poverty is a subjective task. For example, the Elder Standard chose the US Department of Agriculture (USDA) Low-Cost Food Plan rather than the USDA Thrifty Food Plan. The Thrifty Food Plan allows under \$5 per day for all three meals and is the basis for Food Stamp allotments in the US. The USDA Low-Cost Food Plan allocates about \$7 per day, which the Elder Standard identified as a more realistic plan. In addition, in areas with sizable public transit systems, the Elder Standard used the monthly cost of a senior transportation pass rather than the cost of driving a private automobile for those elders whose health would continue to enable them to rely on the more affordable public transportation. There is a balance, therefore, between independent economic security and allocating the appropriate amount for the *basic* needs of older adults.

A second important feature of the Elder Standard that we emulate is the goal of finding the cost for an elder to age in place with well-being, dignity and independence. That is, the cost for seniors to continue living at home with financial independence - whether their home is rented, mortgaged or owned. This intent has an important bearing on our approach to pricing each of the basic needs. For example, shelter costs do not include nursing homes. That is, services for long-term health conditions are assumed to be administered at home. Also, the food component is built from a food basket that is purchased at a local supermarket, rather than the cafeteria food prices at a collective elderly living residence or the cost percentage of the bundled food and shelter price of a nursing home. This

assumption is also closer to reality for the majority of seniors. In 2001, 93% of seniors aged 65+ lived in private households, while the other 7% lived in collective dwellings, mainly healthcare institutions such as nursing homes and hospitals (Clark, 2005). This rate increases with age: only 2% of seniors aged 65-74 resided in collective dwelling, compared to 32% of those aged 85+. Clark further noted that the rate of institutionalization has decreased over time owing to the growth in home-care programs and community supports, making it possible for seniors in poorer health to live in their homes longer. Clark noted that seniors are statistically far less likely to move homes than younger adults. Given that the aim of our study is to assess the amount that someone should save for retirement to cover basic needs, we assume that the majority of people save so that they can continue to live in their own home. Clark made a similar conclusion by noting that seniors with higher incomes are more likely to choose to live independently and privately in their family home than those with lower incomes, suggesting that this is the preferred option for those who can afford it.

4 BUILDING AN ABSOLUTE THRESHOLD FOR THE ELDERLY

To determine the cost for each component of an absolute threshold - food, shelter, medical, transportation and miscellaneous - the developers of absolute measures generally choose between:

- building a basket to represent basic spending of poor people on that component then pricing each of its items or
- assuming the reported average consumption cost of the component from census data.

The choice between a subjective evaluation of needs versus reported consumption costs could produce similar results for some items since the consumption level should equal the typical cost of the basic necessity - e.g., the median reported rent paid in cities with low vacancy rates. Food spending data, however, could be excessive since it could include restaurants and other amenities that are not basic necessities. Sarlo (2001) explained that using consumption data also bears other problems such as under-reporting and the omission of government subsidies as well as any in-kind gifts. For example, subsidized housing can create complications if the amount subsidized is not reported.

Ruggles (1990) explained that both methods - relying on consumption data and building a basket - are influenced by the actual lower income of seniors. Their lower income leads to lower spending, which creates the appearance that they “need” less than other age groups.

The National Council of Welfare advocated for more specific baskets rather than percentages derived from reported survey spending. Their preference was not because baskets were more credible, they simply felt that readers could better understand a basket of specific items than vague, general categories (for example, calculating the cost of a category such as “transportation” by pricing the actual cost of taking the bus or driving a car rather than by relying on statistics derived from reported expenditure data). Taking into consideration these concerns, we endeavor to build our threshold from individual items whenever practical.

We ascertain from Canadian data the basic costs of living for both a single and a two-person household, for those who own their own home with and without a mortgage, those who rent, those who rely on public transportation and those who require a private automobile. Finally, using the framework of the Elder Standard, we look at the impact of changing health by investigating the costs for the elderly requiring long-term care. We produce thresholds for five urban centers - Halifax, Montreal, Toronto, Calgary and Vancouver¹¹ - which we assume should also be adequate for the rest of Canada since the cost of living is generally lower in smaller cities and rural areas. A second reason to choose cities is that the majority of the Canadian population live in a metropolitan or urban area, including three of every four seniors (Health Canada, 2002).

Turcotte and Schellenberg (2006) showed in their report designed to statistically portray the general well-being¹² of Canadian seniors, that there can be considerable differences between the characteristics and life circumstances of younger and older seniors. Thus to account for the potential importance of age, we categorize our elder thresholds into two age groups: 65-74 and 75+. We determine a couple’s age grouping by the age of the household maintainer¹³, where a couple is two people related to each other by marriage or common-law.

¹¹For those unfamiliar with Canadian geography, the five chosen cities are spread across the country and each lie in a different province and represent a different region of Canada. Toronto, Montreal, Calgary and Vancouver are among the top five largest metropolitan areas in Canada, while Halifax has the largest population among cities in the Atlantic provinces.

¹²The indicators of well-being were health, wellness, security, continuous learning, work and participation in society, and support and care in the community.

¹³This is the individual who is primarily responsible for paying the rent or the mortgage, or the taxes, or the electricity bill, and so on, for the dwelling.

Four additional features of this study are:

- Universal health subsidies are included in the thresholds because they are available to all Canadians regardless of their salary.
- Following the example of the Elder Standard, we do not incorporate income taxes into our calculations since income tax varies by the income's source. For example, the OAS pension is taxable income while GIS is not¹⁴. Our threshold is, therefore, an after-tax measure.
- As to senior discounts, only one component of our basket directly incorporates a senior's discount - the senior public transportation pass. There are other components, such as home-based long-term care assistance, that indirectly incorporates any cost savings since we rely on actual expenditure data.

Our threshold, like all thresholds, is subjective and somewhat arbitrary. Seniors live in diverse circumstances that can change suddenly such as the onset of a disease or the death of a spouse. Further, while some seniors benefit from the care-giving and shelter of family and friends, others must pay for these services. Seniors are, consequently, a diverse group whose individual circumstances necessitate different levels of financial support. Although the final value of our threshold could satisfy a typical senior, it will not fit all seniors.

5 PRICING EACH COST COMPONENT

This section summarizes the cost components of the threshold. In the broader paper, we divide the appendices to address each component of our threshold. Appendix A prices the food component; Appendix B is shelter costs; Appendix C is the cost of medical care; Appendix D is the cost of transportation; Appendix E is the miscellaneous category and Appendix F is the potential costs of home-based long-term-care assistance. Each appendix discusses the various approaches of the MBM, Sarlo, the National Council of Welfare and the Elder Standard to price each component of their basket. Combining their insight with other relevant information, we determine the prices of each component of our elderly threshold. Our assumptions also draw on our earlier discussion of the relationship between basic needs spending and an individual's age and retirement status.

¹⁴Source: www.cra.gc.ca

Food: Health Canada's National Nutritious Food Basket (NNFB) is the basis of the food component. The NNFB was individually priced for each of the relevant provinces or, where possible, by the actual city. Table 11 in Appendix A lists the 2001 monthly food costs for each gender in the two age groups. To reflect economies of scale, the costs are adjusted to reflect family size.

Shelter: We price the shelter component of our threshold according to shelter type (renting and owning) and for two household compositions (single and couple). For the cost of renting, we use the 2001 Canada Mortgage and Housing Corporation rental prices, the 2000 Labour Force Survey and the 2001 Survey of Household Spending (SHS). To calculate the cost of owning a home, with and without a mortgage, we use the 2001 Canadian Census and the 2001 SHS to find the costs of utilities, monthly mortgage payments, property taxes, condominium fees and household insurance. Appendix B provides a more thorough explanation of our approach to pricing shelter.

Medical: In Appendix C, we rely on the 2001 SHS to compute the cost of health care for two age groups living in each of the relevant provinces (see Table 17).

Transportation: We price the transportation cost component for two categories: private automobile and public transportation. To produce the cost of owning and operating a private automobile, we adopt the MBM's assumptions with the combination of information from the 2001 SHS, Natural Resources Canada and the Elder Standard¹⁵. To price the cost of public transportation, we use the 2001 cost of senior public transit passes for each city and add the MBM's estimate of taxi fares. Appendix D provides the resulting costs in Tables 19 and 18.

Miscellaneous: The miscellaneous component covers essentials such as clothing, paper goods, cleaning products, household items, personal hygiene items and telephone service. We follow the Elder Standards estimate and set this fifth component equal to 20% of the total cost of the first four components. See Appendix E for details.

¹⁵We include a modest automobile for cases where public transportation would be difficult or impossible owing to poor physical health.

Home-Based Long-Term Care Services: Assistance in daily activities can become a necessity for seniors who are limited by long-term health conditions. Similar to the Elder Standard, we price two long-term care service packages to reflect a low and high level of assistance. Appendix F discusses the prevalence and nature of home-based long-term care services and explains our estimates, which are based on the 2001 Participation and Activity Limitation Survey.

6 THE THRESHOLD

In this section, we tally the five components - housing, food, health care, transportation and miscellaneous - to arrive at the final elderly thresholds for our Canadian cities. We rely on the costs computed in Appendices A to F . There are 108 thresholds for each city owing to the different “tracks” for housing and transportation, as well as for personal traits - age, marital status and gender - and, finally, for the level of necessary long-term care assistance - none, low and high. The following list provides the different tracks for each variable:

Housing (3): tenant, homeowner with and without a mortgage;

Transportation (2): passenger of public transportation and taxi rides or private automobile owner;

Age (2): 65-74 or 75+ (affects cost of food and health care);

Household Size and Gender (3): single male, single female or couple (affects cost of food, shelter and owning a private automobile);

Home-Based Long-Term Care Assistance (3): none, low and high.

Tables 1 through 5 display the annual elderly thresholds for each Canadian city. We present the lowest threshold for a single person and a couple among the possible tracks; that is, aged 65-74 owning a home without a mortgage and relying on public transportation. In the case of the single’s food expense, which is affected by gender, we present the average cost of both genders. Below this, we proceed by listing the annual cost adjustments that allow for each gender, different ages and shelter arrangements, as well as a different mode of transportation¹⁶.

¹⁶Note that each of the adjustment costs, except for the cost of long-term care assistance, includes an additional 20% to provide the appropriate increase in the miscellaneous expense component (see Appendix E).

Halifax		Single	Couple
Expenses		(age 65-74)	(age 65-74)
Food		1,889	3,613
Shelter (house w/o mortgage)		4,154	4,562
Health Care		918	1,836
Transportation (Public)		653	1,306
Miscellaneous		1,523	2,263
Total Annual Elderly Threshold		9,136	13,580
<i>Total Annual Cost Adjustment for Different Variables</i>			
<i>Gender Specific:</i>	Food	(male) 256	
		(female) -256	
<i>Age 75+:</i>	Health Care	-234	-468
	Food	(male) 21	-275
		(female) -309	
<i>Other Shelter Types:</i>	With Mortgage	8,021	9,590
	Renting	3,343	3,069
<i>Other Means of Transportation:</i>	Private Automobile	3,190	3,291
<i>Long-term-care:</i>	Low	989	
<i>(per person)</i>	High	12,951	

Table 1: 2001 Elderly Threshold for Halifax. Source: Author's own calculations.

For example, values to the right of “Other Means of Transportation: Private Automobile” are the added costs to the bolded “Total Annual” of relying on a private automobile rather than public transportation for a single or a couple. In Table 1, to calculate the elderly threshold for an 75-year-old single female Haligonian who has a mortgage and drives her own car, add - \$234 - \$309 + \$8,021 + \$3,190 to the annual total \$9,136, giving a grand total of \$19,804. A similar Montrealer would have a threshold of \$20,037, \$25,745 for a Torontonion, \$23,101 for a Calgarian and \$23,391 for a Vancouverite.

Although all the thresholds are for the 2001 base year, they can easily be carried forward or brought back to any year using the city-specific CPI (see Table 6).

Expenses	Montreal	Single (age 65-74)	Couple (age 65-74)
Food		1,947	3,570
Shelter (house w/o mortgage)		4,569	4,972
Health Care		1,148	2,297
Transportation (Public)		467	934
Miscellaneous		1,626	2,354
Total Annual Elderly Threshold		9,757	14,126
<i>Total Annual Cost Adjustment for Different Variables</i>			
<i>Gender Specific:</i>	Food	(male) 194 (female) -194	
<i>Age 75+:</i>	Health Care	25	50
	Food	(male) 194 (female)-194	0
<i>Other Shelter Types:</i>	With Mortgage	7,250	8,712
	Renting	1,589	1,327
<i>Other Means of Transportation:</i>	Private Automobile	3,199	3,474
<i>Long-term-care: (per person)</i>	Low	989	
	High	12,951	

Table 2: 2001 Elderly Threshold for Montreal. Source: Author's own calculations.

7 HOW DOES THE THRESHOLD COMPARE?

This section compares our threshold to the other Canadian measures, both absolute and relative, as well as the Canadian universal senior benefits for low-income earners - OAS plus GIS. We first present the prominent Canadian minimum financial income benchmarks then make the comparison.

Statistics Canada calculates the LICO before and after-tax for seven family sizes living in five community sizes. They also calculate the LIM before and after-tax for six family sizes. Unlike the LICO, the LIM makes an adjustment for the number of adults and children in the family (Statistics Canada, 2004). For both singles and couples, Table 7 presents the after-tax 2001 LICO for the two

Toronto		Single	Couple
Expenses		(age 65-74)	(age 65-74)
Food		1,750	3,348
Shelter (house w/o mortgage)		5,735	5,970
Health Care		854	1,709
Transportation (Public)		1,132	2,264
Miscellaneous		1,894	2,658
Total Annual Elderly Threshold		11,366	15,949
<i>Total Annual Cost Adjustment for Different Variables</i>			
<i>Gender Specific:</i>	Food	(male) 250	
		(female) -250	
<i>Age 75+:</i>	Health Care	111	222
	Food	(male) 27	-261
		(female) -300	
<i>Other Shelter Types:</i>	With Mortgage	12,010	15,379
	Renting	5,847	5,687
<i>Other Means of Transportation:</i>	Private Automobile	2,559	2,072
<i>Long-term-care:</i>	Low	989	
<i>(per person)</i>	High	12,951	

Table 3: 2001 Elderly Threshold for Toronto. Source: Author's own calculations.

urban sizes that are relevant to the five cities we examined, the after-tax 2001 LIM and the maximum annual OAS and GIS benefit rates in 2001. We should also note that while GIS is not taxable, the income from OAS is. If GIS and OAS were an individual or couple's only source of income, then there would be no income tax deductions since the OAS benefit would fall below the personal exemptions.

Table 8 lists the 2001 MBM (HRSDC, 2006) and Sarlo's 1997 Basic Needs Poverty Line (Sarlo, 2001), which we updated to 2001¹⁷. In Table 8, Sarlo and the MBM employed equivalence scales to derive the single and couple values from their original thresholds for the reference family. These equivalence scales allow for the different needs of children and adults, as well as the economies of scale for

¹⁷Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue no. 62-001-X.

Calgary		Single	Couple
Expenses		(age 65-74)	(age 65-74)
Food		2,077	3,974
Shelter (house w/o mortgage)		4,578	4,812
Health Care		1,090	2,181
Transportation (Public)		232	464
Miscellaneous		1,595	2,286
Total Annual Elderly Threshold		9,573	13,716
<i>Total Annual Cost Adjustment for Different Variables</i>			
<i>Gender Specific:</i>	Food	(male) 311	
		(female) -311	
<i>Age 75+:</i>	Health Care	380	760
	Food	(male) 21	-346
		(female) -383	
<i>Other Shelter Types:</i>	With Mortgage	10,231	12,845
	Renting	4,386	4,228
<i>Other Means of Transportation:</i>	Private Automobile	3,300	3,818
<i>Long-term-care:</i>	Low	989	
<i>(per person)</i>	High	12,951	

Table 4: 2001 Elderly Threshold for Calgary. Source: Author's own calculations.

larger families.

In Table 9, we calculate the elderly threshold for three different sets of circumstances in each of the five cities, based on Tables 1 through 5. To compute a benchmark that is comparable to Sarlo's and the MBM measures, we first list the elderly threshold for a single and a couple who are tenants and who rely on public transportation. Further, the single and couple are aged 65-74, they all require a low level of long-term care assistance (for the couple, we assume that both spouses require this care) and the single's threshold is the average of a single male and a single female. Then we list the threshold for what we consider a more typical set of circumstances. These individuals differ from those in the "benchmark"

Vancouver		Single	Couple
Expenses		(age 65-74)	(age 65-74)
Food		2,133	4,080
Shelter (house w/o mortgage)		3,996	4,900
Health Care		1,070	2,139
Transportation (Public)		677	1,354
Miscellaneous		1,575	2,495
Total Annual Elderly Threshold		9,451	14,968
<i>Total Annual Cost Adjustment for Different Variables</i>			
<i>Gender Specific:</i>	Food	(male) 304 (female) -304	
<i>Age 75+:</i>	Health Care	354	709
	Food	(male) 28 (female) -370	-328
<i>Other Shelter Types:</i>	With Mortgage	10,778	15,480
	Renting	5,895	4,812
<i>Other Means of Transportation:</i>	Private Automobile	3,178	3,254
<i>Long-term-care: (per person)</i>	Low	989	
	High	12,951	

Table 5: 2001 Elderly Threshold for Vancouver. Source: Author's own calculations.

scenario by owning a private automobile and a house without a mortgage¹⁸. Finally, the “high” threshold presents the threshold for seniors who live in their own home with a mortgage, drive a car and require a high level of long-term care assistance. The difference between the “high” threshold and the first two illustrates the range of possible basic expenses owing to a senior's various circumstances.

In Table 7, each “typical” threshold exceeds the relevant LICO and LIM except for singles living in major urban cities. A likely explanation for this difference is that the “typical” threshold does not account for the wide variety of rental prices

¹⁸In 2001, over 60% of senior households in this age category owned a mortgage-free home (Turcotte and Schellenberg, 2006).

City	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Halifax	88.3	90	90.7	92.2	95.1	97	100	103.2	105	107.6	109.8
Montreal	89.4	90.6	92	93.5	95.7	98	100	102.4	104.4	106.7	108.6
Toronto	87.9	89.5	90.4	92.2	95	98	100	103	104.7	106.7	108.4
Calgary	85.4	87.2	88.5	90.8	94.1	96.4	100	103.5	105.3	107.4	112.3
Vancouver	92.1	92.6	93	93.9	96	97.8	100	102	104	106	108

Table 6: All-Items City-Specific CPI. Source: Source: Statistics Canada, CAN-SIM, table 326-0021 and Catalogue no. 62-001-X.

2001		
Measure	Single	Couple
LICO-IAT (<i>Urban Area</i> <i>100,000 to 499,999</i>):	13,107	15,992
LICO-IAT (<i>Urban Area</i> <i>500,000+</i>):	15,559	18,986
LIM-IAT (<i>All Areas</i>):	13,243	18,540
Maximum OAS (<i>All Areas</i>):	5,233	10,466
Maximum GIS(<i>All Areas</i>):	6,218	8,100
Total Maximum GIS and OAS:	11,451	18,566

Table 7: After tax LICO and LIM for an Adult Single and an Adult Couple and the Maximum Average OAS And GIS Benefit Rates for 2001. The LICO is given for Two Differently Populated Urban Areas. Source: Statistics Canada (2004) and HRSDC website.

in each city. If we assume that the seniors are tenants rather than homeowners, then the threshold would exceed the LICO and LIM in every city by over \$1,900 except in Montreal where the cost of renting is very low.

Like the MBM and Sarlo's Basic Needs Poverty Line, the "benchmark" thresholds in Table 9 emphasize the immense impact of geographical location on an individual's primary expenses. Relative to both the MBM and Sarlo, our "benchmark" elderly threshold is higher for both household compositions in every city. As we explained earlier, however, the MBM did not include health care costs. If we subtract the medical expense component from each city's elderly "benchmark" threshold, they become closer to the MBM values - the threshold of some cities

City	2001 MBM		2001 Sarlo	
	Single	Couple	Single	Couple
Halifax	12,739	17,834	9,247	14,510
Montreal	11,691	16,367	8,314	13,046
Toronto	14,369	20,116	10,591	16,618
Calgary	13,200	18,479	8,366	13,128
Vancouver	14,284	19,997	11,146	17,490

Table 8: The 2001 MBM and Sarlo’s 1997 Basic Needs Poverty Line Projected to 2001. Source: HRSDC (2006) and Sarlo (2001).

City	Benchmark		Typical		High	
	Single	Couple	Single	Couple	Single	Couple
Halifax	13,468	18,627	13,315	18,848	33,298	52,363
Montreal	12,335	17,432	13,945	19,579	33,157	52,215
Toronto	18,202	23,614	14,913	19,998	38,885	59,301
Calgary	14,948	19,922	13,862	19,512	36,055	56,280
Vancouver	16,335	21,759	13,618	20,200	36,358	59,604

Table 9: 2001 Elderly Threshold for three scenarios: “Benchmark” to compare to MBM 2001 and Sarlo’s 2001; “Typical” to price the basic living cost of what we consider are typical circumstances; and “High” to represent the cost associated with circumstances that require a higher level of necessary income.

exceed the MBM, while others fall short. Furthermore, the MBM’s general objectives in terms of living standards are loosely in line with ours, except they allow for some luxuries such as modest recreation and entertainment. Consequently, these results suggest that the basic cost of living for an elderly person is near to, or even higher than, that for a non-elderly adult. This conclusion is in opposition to the commonly held belief that a retired senior automatically requires less income than a working non-senior. In fact, when considering only basic needs, the deterioration of health that accompanies old age is the biggest culprit of expense in our threshold - the added cost of a high level of long-term care would more than double a seniors basic cost of living¹⁹. These results emphasize that an individual’s circumstances are the primary drivers in determining the minimum level of

¹⁹In the US Elder study, this expense was even more startling - exceeding \$40,000 per year.

necessary income after retirement.

Our “typical” threshold in Table 8 could appear quite modest to an individual saving for retirement. In fact, the combination of OAS and GIS alone covers the majority of the costs, but not all as was previously determined by Ruggeri and Bluck (1994) and Sarlo (2001). Although our threshold could provide for an elder’s basic needs, workers generally prefer to “enjoy their retirement” and aim to save enough disposable income to afford joining clubs, taking classes and traveling. Determining a “social comfort line”, as Sarlo (1997) called it, is a very subjective task - whether it be a fixed level of income or replacement ratio. We thus are hesitant to promote the 2/3 of pre-retirement salary rule of thumb, or any fixed percentage, since the proportion depends on the worker’s circumstances and expectations after retirement rather than simply advancing age and current income.

Another point to consider when determining the basic expenses of retirement is the financial hardship that could occur if the worker is unexpectedly obliged to retire early. As previously discussed, unanticipated early retirement can cause an unexpected reduction in income at retirement (Hurd and Rohwedder, 2005). Moreover, early retirement is commonly triggered by poor health, which can lead to large necessary expenses according to our results. It would be advisable, therefore, to add an additional precautionary amount to the absolute thresholds herein to protect against this risk.

8 CONCLUSION

In this study, we calculated the absolute cost of living for a single elderly and an elderly couple living in five major Canadian cities during 2001. The threshold provides a general impression of the necessary after-tax income to cover basic needs for a variety of circumstances. Although the threshold featured lower clothing expenditures and no entertainment spending, we found that the typical cost of living for the elderly was the same, if not greater, than non-elders living in generally the same circumstances. Furthermore, the threshold exceeded the Statistics Canada LICO and LIM in most cities, and the maximum OAS and GIS benefit did not completely cover the basic expenses in any of the cities.

Seniors possess various characteristics and live in diverse circumstances, creating difficulty in prescribing a fixed threshold that is adequate for all. This study should benefit seniors, prospective retirees, financial planners, policy makers and actuaries by enabling them to build a basic needs threshold that somewhat reflects

an individual's circumstances after retirement and by providing a broad sense of the required level of income to cover basic necessities.

ACKNOWLEDGEMENTS

The authors wish to thank Cathy Cotton and Richard Shillington for their helpful insight into the subject matter. They would also like to thank Andrew MacKenzie from Statistics Canada for his assistance in determining the long-term health care cost component. They are also grateful for the information provided by Canada Mortgage and Housing Corporation, Statistics Canada, and the helpful representatives from provincial food baskets initiatives and public transportation organizations. They would like to show their appreciation for the generous financial support of The Actuarial Foundation of Canada. This paper was completed while Bonnie-Jeanne MacDonald occupied a Post-Doctoral Position at the University of Waterloo. She wishes to acknowledge the financial support of the Natural Sciences and Engineering Research Council of Canada.

REFERENCES

- Alan, Sule, K. Atalay, and T. F. Crossley. 2007. Adequacy of Retirement Savings: Subjective Survey Reports by Retired Canadians. *Social and Economic Dimensions of an Aging Population Working Paper #199*. McMaster University, Hamilton, ON.
- Baker, Michael and M. Gunderson. 2005. Seniors Income Adequacy. Social Development Canada, Ottawa.
- Brown, Robert L., and J. Liu. 2001. The shift to defined contribution pension plans: Why did it not happen in Canada? *North American Actuarial Journal* 5(3): 65-77.
- Brown, Robert L., and S. G. Prus. 2006. Income Inequality over the Later-life Course: A Comparative Analysis of Seven OECD Countries. *Annals of Actuarial Science* 1(2): 307-317.
- Brzozowski, Matthew, and Y. Lu. 2006. Home Cooking, Food Consumption and Food Production among the Unemployed and Retired Households. *Social and Economic Dimensions of an Aging Population Working Paper #151*. McMaster University, Hamilton, ON.

- Chawla, Raj K. 2005. Shifts in spending patterns of older Canadians. *Perspectives on labour and income* 6(12): 17-28. Statistics Canada Catalogue no. 75-001-XIE. Ottawa.
- Clark, Warren. 2005. What do seniors spend on housing? *Canadian Social Trends* 78: 2-7. Statistics Canada Catalogue no. 11-008. Ottawa.
- Denton, Frank T., D. C. Mountain, and B. G. Spencer. 2002. Age, Retirement and Expenditure Patterns: An Econometric Study of Older Canadian Households. *Quantitative Studies in Economics and Population Research Reports* 375. McMaster University.
- Denton, Frank T., and B. G. Spencer. 1988. Inflation protection and economic security in retirement. *Task Force on Inflation Protection for Employment Pensions Plans: Research Studies, Volume 1*. Government of Ontario, Toronto.
- Giles, Philip. 2004. Low Income Measurement in Canada. *Income Research Paper Series*, Catalogue no. 75F0002MIE - No 011. Income Statistics Division, Statistics Canada, Ottawa.
- Hamilton, Malcolm. 2001. The financial circumstances of elderly Canadians and the implications for the design of Canada's retirement income system. From *The State of Economics in Canada: Festschrift in Honour of David Slater*. Patrick Grady and Andrew Sharpe (eds.). Montreal. McGill-Queen's University Press. p. 225-253.
- Health Canada and Interdepartmental Committee on Aging and Seniors Issues. 2002. Canada's Aging Population. Minister of Public Works and Government Services Canada. Catalogue No. H39-608/2002E, ISBN 0-662-31821-8. Ottawa.
- Health Canada. 2001. Health expenditures in Canada by age and sex, 1980-81 to 2000-01. Health Policy and Communications Branch, Health Canada, Ottawa.
- Human Resources and Social Development Canada (HRSDC). 2006. Low Income in Canada: 2000-2002 Using the Market Basket Measure. Human Resources and Social Development Canada, Ottawa.
- Hurd, Michael D., and S. Rohwedder . 2005. Changes in Consumption and Activities in Retirement. *Working Paper 2005-096*, Michigan Retirement Research Center.
- Hurd, Michael D., and S. Rohwedder. 2004. The Retirement-Consumption Puzzle: Anticipated and Actual Declines in Spending at Retirement. *Working Paper 2004-069*, Michigan Retirement Research Center.

LaRochelle-Cote, Sebastien, J. F. Myles, and G. Picot. 2008. Income Security and Stability During Retirement in Canada. *Analytical Studies Branch Research Paper Series*, Catalogue no. 11F0019M No. 306. Business and Labour Market Analysis Division, Statistics Canada, Ottawa.

McDonald, Lynn, P. Donahue, and V. Marshall. 2000. The economic consequences of unexpected early retirement. From *Independence and Economic Security in Old Age*. Denton, Frank T., D. Fretz, and B. G. Spencer (Eds.). Vancouver, BC: University of British Columbia Press.

Munnell, Alicia H., and M. Soto. 2005. How Do Pensions Affect Replacement Rates? *Issue Brief Number 37*, Center for Retirement Research, Boston College.

Munnell, Alicia H., A. Webb, and F. Golub-Sass. 2007. Is There Really a Retirement Savings Crisis? An NRRI Analysis. *Issue Brief Number 7-11*, Center for Retirement Research, Boston College.

The National Council of Welfare. 1999. A New Poverty Line: Yes, No or Maybe? *A Discussion Paper*, Minister of Public Works and Government Services Canada, Ottawa.

Organisation for Economic Co-operation and Development (OECD). 2001. Ageing and Income: Financial Resources and Retirement in 9 OECD Countries. Paris.

Osberg, Lars. 2007. The Evolution of Poverty Measurement - with special reference to Canada. *Working Paper*. Dalhousie University, Halifax, NS.

Ruggeri, G. C., R. Howard, and K. Bluck. 1994. The Incidence of Low Income among the Elderly. *Canadian Public Policy* 20(2): 138-151.

Ruggles, Patricia. 1990. *Drawing the Line, Alternative Poverty Measures and Their Implications for Public Policy*. Washington, D.C. Urban Institute.

Russell, Laura Henze, E. A. Bruce, and J. Conahan. 2006. A Methodology to Determine Economic Security for Elders. Gerontology Institute, University of Massachusetts Boston, and Wider Opportunities for Women, Washington, DC.

Sarlo, Chris. 1996. *Poverty in Canada. 2nd edition*. The Fraser Institute, Vancouver, BC.

Sarlo, Chris. 2001. Measuring Poverty in Canada. *Critical Issues Bulletin*, The Fraser Institute, Vancouver, BC.

Sarlo, Chris. 2006. Poverty in Canada: 2006 Update. *Fraser Alert*, The Fraser Institute, Vancouver, BC.

Statistics Canada. 2004. Low income cutoffs from 1994-2003 and Low income measures from 1992-2001. *Income Research Paper Series*, Catalogue no. 75F0002MIE - No 002. Income Statistics Division, Statistics Canada, Ottawa.

Turcotte, Martin, J. Liu, and G. Schellenberg. 2006. A Portrait of Seniors in Canada. Statistics Canada, Ottawa, ON.

Veall, Michael R. 2007. Which Canadian Seniors Are Below the Low-Income Measure? *Social and Economic Dimensions of an Aging Population Research Papers 186*, McMaster University, Hamilton, Ontario.

Appendix

The purpose of this appendix is to describe each component of our basket by explaining the methodology behind its pricing and commenting on any issues and data restraints. We review data sources employed by the MBM, Sarlo, the National Council of Welfare and the Elder Standard, the benefits and disadvantages of their approaches and other relevant information that contribute to building each component of our threshold.

A FOOD

A.1 Sarlo and MBM's Food Baskets

Sarlo's Basic Needs Poverty Line (1996, 2001, 2006) and the MBM (HRSDC 2006) both relied on constructed food baskets designed for the reference family. The food baskets were each described as representing a nutritional and palatable diet. The annual cost of each food basket for the reference family made-up the food component of their respective thresholds. Both approaches endorsed home food production and viewed restaurants as a luxury rather than a necessity. They only included prepared foods when it was unlikely that the item would be produced at home from raw ingredients, such as yogurt.

Despite the similarities between the objectives of both food baskets, they did not produce similar costs. In Table 10, we compare the 2001 MBM for Montreal, Toronto and Vancouver to Sarlo's 1997 Basic Needs Poverty Line (Sarlo, 2001), which we updated to 2001 using the all items CPI for each of the cities²⁰. The two most recent MBM values, for the years 2001 and 2002, rely on the NNFB. The 2001 and 2002 MBMs were published simultaneously by HRSDC in 2006. The Prices Division of Statistics Canada collected the prices that were needed to calculate the 2001 and 2002 MBM, which included finding the cost to purchase the NNFB for the reference family in 40 cities across Canada. Sarlo's 1997 Basic Needs Poverty Line is the most recently compiled measure and all published values thereafter were updated using the CPI. Sarlo (2001) assumed the cost of food to be uniform across each province. Only for shelter did Sarlo find city-specific costs. As for the remaining components, Sarlo assumed a Canadian average. For example, clothing data were drawn from the assumption of a national retailer. Table 10 shows that the budget allocation for food of Sarlo's Basic Needs Measures

²⁰Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue no. 62-001-X.

is more frugal than that of the MBM.

The source of the difference in costs lies in the purpose behind each of the food baskets. Sarlo (1996) aimed to obtain his food basket objectives at the least cost. To accomplish this, he used an optimization technique to find a basket that was palatable, least costly and nutritionally balanced by meeting all of the requirements of Health Canada and the Canada Food Guide in terms of energy and variety. He explained that his decision to price his own constructed basket was because of his dissatisfaction with the prevailing food basket of that time, Agriculture Canada's Nutritious Food Basket, which contained numerous items of bad nutrition and high costs, name-brand processed foods, uneconomical small sizes (such as 2L of milk rather than 4L for a family of four), and a physically impossible level of food variety in the basket. Most importantly, he tested for various age/sex categories and found that the caloric intake of consuming the basket exceeded recommended levels. Agriculture Canada stopped producing its Nutritious Food Basket in 1995, and in 1997 Health Canada built a revised food basket - the Health Canada's National Nutritious Food Basket (NNFB) (National Council of Welfare, 1999). Regardless, the features of the NNFB do not match Sarlo's objectives - MBM (HRSDC, 2006) described the NNFB as not an "ideal diet nor the cheapest diet which meets nutritional requirements", rather it represented a basket of food that was nutritious and consistent with what ordinary Canadians enjoyed eating. Further, although many of Sarlo's criticisms do not apply to the revised basket, its basket of 66 items could possibly still seem excessive compared to Sarlo's basket of 36 items.

Sarlo and the MBM's food baskets appeared valid as both authors found their annual cost of food estimates to be in line with actual food expenditure in Canada, after they adjusted for the presence of restaurant spending in the surveyed data. Using the 1996 FAMEX survey, Sarlo (2001) observed that his 1997 estimate fell between the average expenditure on food in 1996 by those families of four in the bottom income quintile and the overall average expenditure on food by all families of four in Canada. Similarly, Michaud et al. (2004) observed that, from the SHS 1997-1999 survey with amounts converted to 2000 prices using the CPI, the cost of the 2000 NNFB fell between the median food expenditure of two-parent and two-child families in the second income decile and the overall median food expenditure of families with the same composition.

	Montreal		Toronto		Vancouver	
	Sarlo	MBM	Sarlo	MBM	Sarlo	MBM
Food	5,685	6,425	5,783	6,102	5,754	6,912
Shelter	6,785	7,280	11,658	12,193	12,029	11,289
Clothing	2,176	2,298	2,203	2,283	2,125	2,302
Telephone	321	-	325	-	314	-
Cleaning	172	-	174	-	168	-
Household insurance	216	-	219	-	211	-
Furniture & equipment	323	-	327	-	316	-
Laundry	520	-	527	-	508	-
Public Transportation	701	1,365	710	2,379	684	1,713
Personal care	494	-	500	-	483	-
Health care	915	-	926	-	894	-
Miscellaneous	108	6,013	109	5,780	106	6,351
Total	18,419	23,381	23,462	28,737	23,590	28,567

Table 10: MBM and Sarlo’s Basic Needs Poverty Line for a family of four in 2001. (We updated Sarlo’s 1997 values to 2001 using the all-items city CPI). Sources: HRSDC (2006) and Sarlo (2001).

A.2 Aging, Retirement and Food Spending

Studies have commonly observed a drop in food consumption among the elderly after retirement (Brzozowski and Lu, 2006). This observation has been recognized as a component of the “retirement-consumption puzzle”. Contrary to this, Brzozowski and Lu (2006) found that households consume approximately the same quality and quantity of food regardless of their employment statuses. Taking advantage of both expenditure and nutritional data for ages 25-51 and ages 55-74, they were able to discern actual food consumption from food expenditure. They found that the fall in expenditure was due to more home food production and fewer processed meals, as we noted in the introduction of this paper. A common feature of the poverty threshold for both Sarlo and the MBM is the assumption that people of low income could not afford to frequent restaurants or eat processed meals. Interestingly, their food basket’s diet of home-based food production from raw

ingredients is more consistent with the actual food habits of retired people than those in the workforce according to Brzozowski and Lu (2006), rather than just the poorer among them.

The Health Canada NNFB shows a drop in the quantity of food consumed at older ages, an effect of aging that is not measured in Sarlo's basket. This feature could seem inconsistent with Brzozowski and Lu (2006), depending on the grounds for the decline. The lower consumption is likely attributed to the notion that the elderly generally need to eat less as they age since they require fewer calories on account of their reduced activity level. The reduction in necessary calories for the elderly is, in fact, the foundation of the lower poverty threshold for the elderly in the US federal government poverty measure (Ruggles, 1990). Looking at the Canada Food Guide, the elderly are recommended to have fewer servings of vegetables, fruit and grains, but concurrently also more servings of dairy products - a net impact of a lower quantity of food. The Brzozowski and Lu (2006) study specifically examined, however, the impact of retirement and did not comment on the effect of aging on food consumption, so there is no inconsistency.

It could be argued that seniors could continue to consume the same quantity of food and even increase their level of activity after retirement. We can continue to justify a cheaper food plan under this scenario since a healthy, retired senior who engages in physical activity is likely able to allocate more time to efficient shopping than if employed. Indeed, Brzozowski and Lu, who included food shopping as a component of food production along with meal preparation and clean up, observed this trend in their data. Despite a possibly unchanging calorie intake, the retirement status of healthy, older individuals offers the opportunity to devote additional time to prudent grocery shopping, effectively lowering the cost of purchasing the Health Canada NNFB, whose agreed-upon method of pricing is to use average consumer prices (Nova Scotia Nutrition Council and the Atlantic Health Promotion Research Centre, 2003). A further benefit of the age distinctions in the NNFB is that the lower quantity of food for the elderly has the advantage of drawing the possibly excessive price of the food basket nearer to Sarlo's estimate.

On the other hand, Ruggles (1990) argued that food needs could actually increase with age. She explained that, although the elderly could require fewer calories, they could also require special diets with higher costs owing to a medical condition. Also, worsening health that accompanies old age could limit their home food production more so than when they were employed. These points seem particularly relevant for ages 75+, which were not, unfortunately, included in Brzozowski and Lu's study. To acknowledge the added cost of being unable to prepare one's own meals owing to poor health, Appendix F measures the associ-

ated costs of requiring home-based assistance, including food preparation.

A.3 Pricing the Food Cost

Although both the MBM and Sarlo food baskets have merits, we chose to use the MBM approach for numerous reasons. The first is to maintain consistency with the Elder Standard. For one, the Elder Standard relied on the US Department of Agriculture (USDA) Food Plans that, like the Health Canada NNFB, was prepared by its respective federal government. In addition, they both distinguish the basic nutritious diet by age and sex, as opposed to Sarlo's basket where we would need to use the adult equivalent factor to calculate a senior's food cost. Also, we noted earlier that the Health Canada NNFB was not intended to find the lowest cost nutritious diet. Similarly, the Elder Standard chose the USDA Low-Cost Food Plan over the USDA Thrifty Food Plan to represent an adequate diet since they considered the latter too frugal. The cost objective of the Health Canada NNFB appears more in line with the Elder Standard approach.

Unfortunately, the Prices Division of Statistics Canada did not collect the costs of the NNFB for the age groups in the five cities of interest to this study. However, many of the provinces do; we therefore used the provincially priced baskets. Information pertaining to each of the nutritious food basket was obtained through individual correspondence with the responsible body of each basket. A NS food costing working group prepared a report in 2006 that summarized all existing food costing initiatives across Canada, detailing the motivation, objectives, methods, support and outcomes for each province and territory (Nova Scotia Nutrition Council and the Atlantic Health Promotion Research Centre, 2006). Not all the provincial food baskets are identical to the Health Canada NNFB - although, they are very similar. Toronto, Alberta and Montreal all relied on modified versions of the NNFB while NS and BC made use of the original basket. The earliest costing for NS was in 2002, so we convert the food basket price to 2001 using NS CPI²¹. Each of the food baskets was priced provincially, except for Toronto and Montreal where a city-specific price was available.

Table 11 gives the 2001 annual cost of food for males and females in two age groups. For Alberta and Montreal, three food costings were collected in 2001, so we took the average of the three. Further, the Montreal basket was revised in 2005 and the 2001 basket did not, unfortunately, distinguish age groups above age 50 like the other baskets. In Table 11, we also list the adjustment that must be made

²¹Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue no. 62-001-X

depending on the senior’s family size²². For example, in the case of a 75-year-old male senior living alone in Montreal, the annual cost of food consumption should increase by 20% ($=\$146 \times 1.2$). If that same senior lives with his spouse, however, the cost of his individual annual food consumption increases by only 10% ($=\$146 \times 1.1$) and the cost of his wife’s food also increases by only 10% ($=\$146 \times 1.1$). These adjustments thus incorporate the economies of scale in larger household sizes.

City	Male		Female		Family Size Adjustment	
	50-74	75+	50-74	75+	Single	Couple
Halifax	1,828	1,658	1,457	1,418	15%	10%
Montreal	1,758	1,758	1,488	1,488	20%	10%
Toronto	1,703	1,542	1,341	1,305	15%	10%
Calgary	2,031	1,822	1,581	1,529	15%	10%
Vancouver	2,075	1,875	1,635	1,586	15%	10%

Table 11: 2001 Nutritious Food Basket Annual Cost. Source: Contacts from individual provincial food costing initiatives .

B SHELTER

Among typical necessities, the cost of shelter is generally highest. Owing to the large variation that can exist between the cost of renting, owning a home mortgage-free or owning a mortgaged home, the Elder Standard reported housing costs for each of these alternatives. Indeed, from their US national data, the Elder Standard calculated that, compared to renting, the average cost of owning a home with a mortgage is 49% higher and the cost owning a house without a mortgage is 47% lower. Following their example, we also measure the cost of each of the three housing options owing to its significant impact on an elder’s budget.

B.1 Sarlo, MBM and the Elder Standard’s Shelter Costs

The Elder Standard relied on data from the US Department of Housing and Urban Development, which reports the 40th percentile rent of one-bedroom units

²²We could not obtain the adjustments for Calgary, so we assumed the standard NNFB 15% and 10%.

currently on the market. These rental data do not contain subsidized rents. Also, the prices include utilities. Finding similar Canadian data posed several difficulties. Although there are several sources of rental data, none completely meet our objectives. We explain the data issues in the following paragraphs.

Sarlo (2001) estimated the cost of shelter using data provided by the Canada Mortgage and Housing Corporation (CMHC). The CMHC surveys rents across Canada in privately owned apartment buildings with three units or more. Alternatively, the MBM (HRSDC, 2006) employed reported rental expenditures from Canadian Census data. The MBM (HRSDC, 2006) based their rental estimate on median costs, while Sarlo (2001) assumed 10% below the average rent to reflect his objective of representing the shelter needs of lower-income households. The National Council of Welfare (1999) basket mimicked the reported 1996 MBM shelter value. A last source of rental and utilities data is the SHS.

There are upsides and downsides to each data source. Unlike the Elder Standard data source, the rent values in the CMHC survey may or may not include utilities (electricity, heat and water). Like the Elder Standard data source, it does not include subsidized housing, which is consistent with the objective of our measure. The Census data, on the other hand, has the advantage of reporting the utilities cost in combination with the rental price for each respondent, but its data also contain subsidized rents and there is no indication as to which of the reported rents are subsidized. The Elder Standard avoided US Census rental price data for just this reason. The disadvantage of the SHS is that its sample size for tenants of one-bedroom apartment is very small and city-specific information is not available. Finally, neither the SHS, the CMHC nor the Census data contain information on whether or not appliances are included in the rent. Michaud et al. (2004) described the relevance of this information by explaining, in a report that detailed the methodology, assumptions and data limitations behind the MBM, that the norm of including major appliances such as a stove, a refrigerator, and a clothes washer and dryer in the cost of rent can be quite different across provinces.

B.2 Pricing the Shelter Cost of Renting

To measure the typical rental cost of shelter for an elderly single or couple, we rely on many sources of data since, as Michaud et al. (2004) noted, there is no single source that can adequately provide the full cost of renting. The following bullets explain the data sources that we use to calculate each expense.

Utilities: The Census provides only the combined total of the payments for utilities and cash rent; we were, unfortunately, unable to extract utilities information from this source. We turn, therefore, to the SHS provincial data to obtain the cost of utilities for tenants of one-bedroom apartments. Many utilities are provincially controlled, thus relying on provincial data should be an acceptable step. Even at the provincial level, however, the SHS sample sizes are quite small for our purposes - only ten data points for couple tenants of one-bedroom apartments in NS. Secondly, the results are quite binary - either the respondents pay for utilities or it is included in their rent; consequently, the median utilities cost for some of the provinces is zero. On one hand, we do not want to use “zero” as the typical utilities cost for renters. On the other hand, it is necessary to take into account that some renters do not pay utilities costs since the rental price data, which we discuss below, correspondingly include rents that cover utilities costs and others that do not. For these reasons, we depend on the average cost, rather than the median, to serve as the typical utilities expense for tenants.

Table 12 gives the monthly and annual average utilities costs for single and couple tenants of one-bedroom apartments in each relevant province. The measured cost includes payments for electricity, oil, gas, coal, wood or other fuels, water and other municipal services. The data are for two household compositions since a couple would undoubtedly use more utilities than a single person - this was confirmed by our data. In fact, the difference between the single and couple utilities costs could appear too severe; we examined, however, all the sampled apartments in Canada by the 2001 SHS and found that the average utilities cost for a couple was nearly double the utilities cost for a single tenant. Moreover, the median was more than double.

Tenant Insurance: A household-insurance policy is a necessity since the loss of one’s shelter and belongings would be catastrophic, particularly for the poor (Sarlo, 2001). From the SHS by special request, we obtained the median expense for Canadian tenants who purchased tenant insurance for their one-bedroom apartment, which equaled \$189.50 per year. We were unable to get provincial-specific costs since the sampled number of tenants who purchased tenant insurance for one-bedroom apartments was too small.

Rental Prices: We rely on the CMHC to obtain the median rents of one-bedroom units for each of our measured cities. In Table 13, we list the median

City	Monthly		Annual	
	Single Tenant	Couple Tenant	Single Tenant	Couple Tenant
NS	29	44	342	522
Quebec	33	48	391	576
Ontario	14	22	167	268
Alberta	17	25	198	301
BC	23	23	272	273

Table 12: Average Tenant Monthly and Annual Utilities Payments for One-Bedroom Apartments. Source: 2001 SHS.

monthly and annual cash rents for each city, as given by the CMHC through individual correspondence.

City	Monthly Rent	Annual Rent
Halifax	530	6,360
Montreal	435	5,220
Toronto	850	10,200
Calgary	650	7,800
Vancouver	700	8,400

Table 13: Median Monthly and Annual Cash Rent for one bedroom units in Private Apartments with 3 or more units. Source: October 2001, Rental Market Survey, Canada Mortgage and Housing Corporation

Major Appliances: We adjust the rental prices to take account of the potential costs of purchasing major appliances by following the steps taken by the MBM. Table 14 provides the annual rental price adjustments that account for major appliances and Appendix G outlines the approach taken to arrive at these values. The adjustment for Montreal is significantly higher than the other cities owing the much lower proportion of apartments in Montreal that included these major appliances in the cost of the rent (see Appendix G for more detail) . The annual shelter cost of renting is the sum of \$189.50, Tables 12, 13 and 14.

City	Fridge	Stove	Washer and Dryer	Total
Halifax	5	1	42	48
Montreal	35	11	47	93
Toronto	3	1	41	52
Calgary	5	1	45	45
Vancouver	3	1	43	47

Table 14: Annual Appliance Rent Adjustment. Source: Author’s own calculations.

B.3 Pricing the Shelter Cost of Owning a Home

As for determining the annual cost of owning and operating a home, the Elder Standard determined its housing costs from the elder homeowner cost data in the US Census, which covered payment for mortgages, real estate taxes, insurance, utilities, fuel and condominium fees. For our threshold, we similarly employ the variable “(home)owner’s major payments” from the 2001 Canadian Census data. The homeowner’s major payments equal the sum of payments for electricity, oil, gas, coal, wood or other fuels, water and other municipal services, monthly mortgage payments, property taxes (municipal and school) and condominium fees. As the objectives section explained, seniors are less likely to move homes than non-seniors. To build a threshold that allows seniors to “age in place” (see Section “OBJECTIVES”), we do not exclude seniors who choose to age in their family home although its size could possibly be too large, such as after children move out. Accordingly, we do not specify a particular house size. We do categorize, however, the cost according to household composition - single and couple. Table 15 supplies the median monthly payments for singles and couples, with and without the presence of a mortgage.

A drawback of the Census data is that the reported homeowner costs did not include household insurance costs. This is different than the shelter costs given by the US Census, which included insurance payments. To determine the household insurance expense for homeowners, we rely on the SHS data to acquire the median expenditure in urban areas for each of the relevant provinces. This data set is reasonable seeing that Property/Casualty Companies normally have five pricing regions - BC, Prairies, Ontario, Quebec and the Atlantic Region - as well as a rural/urban split. Table 16 gives the median premium paid in 2001 by single and couple homeowners, with and without a mortgage, who purchase homeowners’

City	Monthly W Mortgage		Monthly W/O Mortgage		Annual W Mortgage		Annual W/O Mortgage	
	Single	Couple	Single	Couple	Single	Couple	Single	Couple
Halifax	874	1,017	317	351	10,488	12,204	3,804	4,212
Montreal	854	986	350	381	10,242	11,832	4,200	4,572
Toronto	1,280	1,528	446	460	15,360	18,336	5,352	5,520
Calgary	1,067	1,263	357	371	12,804	15,156	4,278	4,452
Vancouver	1,056	1,450	307	375	12,666	17,400	3,684	4,500

Table 15: Median Homeowners' Major Monthly and Annual Payments (for household sizes: single and couple). Source: 2001 Canadian Census

insurance covering fire, theft and other perils²³. The shelter cost of owning a home is the sum of Tables 15 and 16.

Province	Monthly		Annual	
	Single	Couple	Single	Couple
NS	29	29	350	350
Quebec	31	33	369	400
Ontario	32	38	383	450
Alberta	25	30	300	360
BC	26	33	312	400

Table 16: Median Household Insurance Monthly and Annual Expenditure for Urban Dwelling Single and Couple Homeowners (With and Without a Mortgage). Source: 2001 SHS.

As discussed in Section “Age, Retirement and Basic Needs Spending”, it is sometimes proposed that the elderly have lower shelter costs since they are more likely to own a mortgage-free home, which would lead to lower costs than any other age group. Ruggles (1990) noted that home ownership for the elderly in particular, however, might not necessarily lead to lower costs as the homes could be older, thus producing higher bills for utilities, maintenance and property taxes. To account for the possibility of age-dependency, the Elder Standard isolated seniors in the Census data to measure their age-specific costs of housing. We did

²³We remove expenditures of zero to obtain the actual cost of purchasing home insurance.

not find, however, systematic difference among the age groups in the Canadian data. Relying on the 2001 SHS, where shelter costs are broken down between each of these cost components, the average and median amount spent in Canada on property taxes, homeowners' insurance premiums, water fuel and electricity was nearly identical between senior and adult homeowners. In fact, the median amount spent by Canadian couples owning a home, either with or without a mortgage, was \$4,000 when the household maintainer was under age 65 and \$3,977 when he/she was aged 65+. Consequently, we do not distinguish by age when calculating the median cost of utilities for single and couple homeowners in each of the respective cities.

C MEDICAL

C.1 Sarlo, MBM, the National Council of Welfare and the Elder Standard's Medical Costs

The medical expenses in the Elder Standard were based on the US federal insurance program, US Part A and B Medicare, which benefits the elderly who are aged 65+. Part A is financed through a payroll tax and Part B is covered by general revenue and a monthly premium. The costs to the elderly include premiums, deductibles, co-pays and the expenses of non-covered services. The categories of non-covered services of the US senior Medicare program appear similar to those not covered by the Canadian universal health system, although the individual financial burden can be quite different for reasons that we explain below. These non-covered services include all out-of-pocket medical expenses such as dental care, eye care, prescription and non-prescription drugs, additional hospital expenses, as well as expenses for any supplemental health plan coverage, such as Medicare Part C and Part D. US Medicare supplemental plans are offered by private insurers and regulated by the state and federal government.

The health cost of the Elder Standard equaled the sum of the fixed premium of Medicare Part B, the average premium rates of Medicare supplemental Part C and D, and the median spending of any additional out-of-pocket expenses (such as co-pays, deductibles, and any other medical charges not covered). This last component was drawn from the elder data in the US Medical Expenditure Panel Survey. This survey tracks health status, age, sex and other factors in addition to health care expenditures.

The MBM did not include non-insured medical costs in their basket, explain-

ing that health spending varies widely from family to family. They also did not include expenses such as income tax, pension contributions, insurance premiums, union and professional dues, child support payments and alimony (HRSDC, 2006). Sarlo's Basic Needs Poverty Line (2001) used the average health-care spending of households given by FAMEX. Owing to the huge variety of medical needs among people, Sarlo felt that building a health care basket would be extremely burdensome as well as ineffectual since it would be mostly speculation. He deemed that drawing average spending from surveys is an appropriate approach since it is unlikely that people spend much beyond their needs on medical expenses when they pay from their own pockets.

The methodology of Sarlo and the Elder Standard is a deviation from the costing methods of the other necessities since they did not price a "basket" of medical items and services but relied on reported expenditures. The National Council of Welfare (1999) did, on the other hand, attempt to produce a basket of medical needs for the reference family of four. The items included dental check-ups, antibiotics, glasses, thermometers and various over-the-counter medicines for common ailments. They did not justify their basket and left it to the reader to decide whether it was realistic or not.

C.2 Pricing the Medical Cost

A difference between our study and that of the Elder Standard was its use of different "tracks" for health. The authors of the Elder Standard found that there was consistent variation between health costs for the elderly and their health status, and consequently the Elder Standard categorized the total health cost by health status: excellent, good and poor. We did not choose different health "tracks" for the following reasons. Although the non-covered medical services of US healthcare model for seniors appears similar to the Canadian healthcare system, the range of personal health care spending is much wider in the US. In Canada, *all* catastrophic health care is paid if medically necessary except for drugs in some cases, while in the US there are many co-pays and deductibles for their covered services. And while the cost of drugs are still on the shoulders of Canadians, their burden is much less severe than Americans. In brief, drugs dispensed outside the hospital in Canada can be completely or in part the financial responsibility of the individual, depending on their age, income and province of residence. Consequently, drugs are the largest out-of-pocket medical spending for Canadian seniors, as well as Canadians in all age groups, after health insurance spending (Chawla, 2005). Despite the severe expense of drugs relative to other health care spending, the

Canadian drug system is much more affordable than in the US. First, most Canadian seniors are covered by provincial, territorial or federal drug plans (Pairs and Docteur, 2007). For example, Ontario single seniors age 65+ pay only \$2 per prescription if their net income is less than \$16,018 and the first \$100 if more than this amount²⁴. Secondly, the federal government protects Canadians from excessive pharmaceutical drug prices by regulating their prices. In the US, on the other hand, patented drug prices are the highest in the world (Pairs and Docteur, 2007). Consequently, Paris and Docteur (2007) reported that, in the US, 44% more is spent on drugs per capita than in Canada. For these reasons, we would expect a larger division between the health spending by the healthy and the non-healthy in the US than in Canada, and we did not pursue the health “track” division when determining health care costs.

Further, although the items in the National Council of Welfare’s medical basket appeared to be a realistic summary of medical needs for an average family, it would be much more difficult to summarize the huge range of medical needs of the elderly. As Denton and Spencer (1988) noted “In terms of health, the elderly are the most heterogeneous age group in the population”. For even simple lack of mobility, which affects 31.5% of seniors and is the most common type of disability among Canada’s elderly (Cossette and Duclos, 2002), there exists an abundant selection of homeopathic and allopathic therapies for each of the various causes, such as arthritis, diabetes and peripheral vascular diseases. Needless to say, the growing medical needs that accompany old age widen the range of necessary medicines and treatments. Attempting to summarize this huge diversity of medical needs in a basket of goods and services for the elderly would be an even more hopeless task than attempting it for an average family. Following the approach of Sarlo (2001), we rely on the average medical expenses of Canadian seniors from the 2001 SHS. However, wishing to capture the typical cost of health care and being aware that elders with lower incomes could perhaps not be meeting their medical needs, we chose reported consumption averages rather than a lower percentile of surveyed consumption levels as Sarlo did. The health care cost component covers all direct costs incurred by the respondent for all personal health care received, including insurance premiums paid, eye care, dental care, prescription and non-prescription drugs, hospital charges, fees from health care professionals and health care supplies such as hearing aids. It does not include any amount that has been or will be reimbursed. The SHS reports on total expenditures per household; consequently, we use data of seniors living alone to isolate

²⁴<http://www.health.gov.on.ca>

the actual cost for a senior in the two age groups (65-74 and 74+).

Despite the common view that all provinces offer publicly funded drug benefits for people over age 65, there is considerable variation between each provincial plan owing to differences in eligibility and cost-sharing policies (Demers et al., 2008). Testing various scenarios of income levels and prescription drug expenditures, Demers et al. (2008) found that a senior male whose annual income was at the national average and who was not covered by a private insurance drug plan paid less than 35% of his prescription drug costs in New Brunswick and PEI while he paid 100% in Saskatchewan, Manitoba and NFLD. Owing to this significant diversity, we list the costs by province²⁵. In addition, some provinces provide additional reimbursements to low-income seniors. According to the 2001 provincial drug plan details gathered from Demers et al. (2008) and Grootendorst (2002), Ontario, Quebec and NS were among the provinces that provided additional coverage for lower-income seniors while Alberta and BC were not (although BC later changed its plan rules and now does make a distinction between income levels). As the goal of this study is to assess the expense of retirement without the need to rely on public subsidies, we do not include in our data the health care expenditures of those seniors who, owing to their low incomes in 2001, would have received additional reimbursements on drug expenses from provincial publicly funded plans. In Ontario, we exclude health care expenditure data of those whose net income fell below \$16,018. In NS and Quebec, seniors lose drug coverage as their eligibility for GIS disappeared, making the choice of which respondents to exclude from the data a more difficult task. For simplicity, we exclude respondents whose income fell below the combined maximum GIS and OAS benefit in 2001 - \$11,451 from Table 7. Finally, we distinguish the health care costs by age groups 65-74 and 75+ for two reasons. First, the number one health care expense for seniors is health insurance spending (Chawla, 2005), and health premiums generally rise with age. Second, the number of necessary drug and other out-of-pocket medical expenses could rise with the worsening health that generally accompanies advancing age. We would prefer more than two age groups, but the sample sizes would be insufficient. Table 17 presents the results. Except for NS, the average cost increased

²⁵In each province, a drawback of living in a rural area rather than an urban city is the potential limited access to many products and services, such as medical treatments and home care for the elderly. Turcotte and Schellenberg (2006) did not find, however, a statistically significant difference between the likelihood of receiving formal services for health care and home support between seniors dwelling in urban and more remote areas in Canada. They explained their results while cautioning that it does not necessarily imply that formal care is easily obtainable in all types of areas.

with advancing age in all the provinces, but the magnitude of the change was quite different - ranging from over \$300 in Alberta to nearly no change in Quebec.

Province	Health Care Cost	
	50-74	75+
NS	918	723
Quebec	1,148	1,169
Ontario	854	947
Alberta	1,090	1,407
BC	1,070	1,365

Table 17: Average Annual Health Care Expenditure for One-Senior Canadian Households. Source: 2001 SHS.

D TRANSPORTATION

D.1 Sarlo, MBM, the National Council of Welfare and the Elder Standard's Transportation Costs

Both the Elder Standard and the MBM (HRSDC, 2006), measured two transportation tracks - public transportation, as well as private automobile costs for cities where adequate public transportation does not exist.

For cities with an adequate public transportation system, the Elder Standard priced the cost of transportation by totaling the annual sum of monthly senior transit passes. The MBM also relied on monthly passes for the two adults in their reference family, but also added monthly taxicab trips for each spouse at \$16 each (in year 2000) for cases where it would be difficult to carry large purchases while riding public transportation. Sarlo's Basic Needs Poverty Line (2001) assumed only public transportation. He noted that his threshold was only for those who can make use of public transportation since private automobiles are a necessity in rural and smaller communities.

Regarding the price of owning and operating a private automobile, the Elder Standard relied on reported average transportation costs. It calculated the expense from the product of:

- the average annual mileage in the US as reported by the National Household Travel Survey for older adults and

- the Internal Revenue Service per-mile travel costs.

For an elderly couple, the result was 9,091 average annual miles (or 14,630 km) x \$0.445 (Operating and Ownership costs per mile) = \$4,045 per year. The total cost was \$3,309 for an elderly single (= 7,435 miles × \$0.445), which was 18% less than the expense for a couple owing to a lower average annual mileage. The National Council of Welfare took a more basket-style approach and set the car component equal to the cost of owning and operating a five-year-old Chevy Cavalier. The MBM also adopted this estimate of basic automobile needs, but added monthly payments for a loan with a term of three years to cover the purchase price of the car. Specifically, it constructed the cost using the following items (this list is taken directly from HRSDC (2006)):

1. 20% of the cost of a five-year old four-door, four-cylinder Chevrolet Cavalier; including interest charges on a 36 month loan for the vehicle's purchase price;
2. the annual cost of an adult driver's license fee;
3. the annual cost of registering the vehicle;
4. the cost of annual mandatory insurance for the vehicle;
5. the cost of 1,500 litres of regular unleaded gasoline for the vehicle;
6. the cost of two oil changes and one tune-up annually.

The Prices Division of Statistics Canada collected provincial and territorial costs for each of these components. The method was not simple and required an appreciable level of data investigation. A full description of the procedure was given in Michaud et al. (2004). In Table 18, we list the 2001 and 2002 costs, along with the updated 2006 costs assuming the all items CPI for each province²⁶. The 2006 values are near to the Elder Standard estimate, although slightly higher on average (based on 1 US\$ = 1 Cdn\$). The MBM found that its measured cost of owning a car was just over half of the reported average spending by the reference family on transportation in 2002.

²⁶Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue no. 62-001-X

	2001	2002	2006 (projected)
Newfoundland & Labrador	4,059	3,928	4,301
PEI	3,767	3,643	4,066
Nova Scotia	4,048	3,997	4,413
New Brunswick	4,038	4,125	4,505
Quebec	3,829	3,666	3,985
Ontario	3,990	3,930	4,276
Manitoba	4,236	4,127	4,486
Saskatchewan	4,077	3,982	4,344
Alberta	3,645	3,484	3,913
British Columbia	4,065	3,917	4,234

Table 18: MBM private automobile cost for each province in 2001 and 2002, and the 2006 projected cost. Source: HRSDC (2006).

D.2 Pricing the Transportation Cost

As we are considering only large urban centers, there should be no need to calculate private automobile costs. Regardless, we do provide the cost of owning a private automobile for cases where mobility constraints would allow a senior to drive a car but would impair their ability to take public transportation, which requires its riders to climb steep stairs, walk to designated stops and potentially stand for long periods of time when seating is no longer available. Albeit, some seniors are neither able to drive nor benefit from public transportation, in which case they depend on informal and formal caregivers and services. We discuss these potential additional costs in Appendix F when we measure the expenses associated with long-term health conditions.

Like the approach of each of the other thresholds, we measure the cost of public transportation using the annual cost of monthly senior passes for each of our measured cities. We also allow for the extra cost of taxi cab rides by duplicating the approach of the MBM. This adds an additional \$192 (12 x \$16) to the overall cost, which amounts to \$197 in 2001 dollars using the Canadian CPI²⁷. Table 19 lists the cost of public transportation for each city. We acquired the 2001 public transit fees by contacting each public transportation organization directly²⁸. The

²⁷Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue no. 62-001-X.

²⁸In 2001, the annual fee in Toronto was \$900 from January to May and \$960 from June until

senior transit pass for Calgary is unusually low, and the Calgary Transit CSR Co-ordinator explained that this low cost for seniors has remained the same for more than the past ten years.

City	Public Transportation Pass		Total Cost (with Taxi Fare)	
	Monthly	Annual	Monthly	Annual
Halifax	38	456	54	653
Montreal	23	270	39	467
Toronto	78	935	94	1,132
Calgary	3	35	19	232
Vancouver	40	480	56	677

Table 19: Senior Citizen Public Transportation Cost 2001. Source: Individual city’s public transportation contacts.

For simplicity and for reasons that we outline below, we assume that the cost for an elderly couple to own and operate a private automobile equals the vehicle expense determined by the MBM, whose method and issues were explained in Michaud et al. (2004) and whose results were given in HRSDC (2006). We note that assuming the same vehicle costs for an elderly couple as that of an adult couple and their two children could appear imprecise seeing that the elderly are generally assumed to incur lower transportation costs given that they no longer have to commute to work. On the other hand, the Elder Standard report noted that this difference in mileage is partially offset by higher auto insurance rates for the elderly. Also, the other costs of owning a private automobile - the loan payments, license fee, registration fee and maintenance of the vehicle - would not be affected by the driver’s age. Furthermore, the MBM’s estimate was possibly on the low side in the first place as it did not include an allowance for repair - an arguably unreasonable omission in the case of a 5-year-old chevy. Finally, the specified amount of gas consumed per year appears to be in line with the typical elderly couple according to the 2001 SHS. Examining Canadian elderly couples aged 65+, their median expenditure on gas and fuels for private vehicles in 2001 was \$1,200. We limited the data to those elderly who spend, per year, over \$50 on their vehicle²⁹ and \$30 or less on public transportation so as to include only

December. We took the weighted average in Table 19.

²⁹This amount could be to cover any expense associated with a vehicle, such as repairs, leasing costs, insurance premiums, parking costs, gas, etc.

those who rely on their vehicle for regular transportation (rather than walking, cycling or public transportation). According to Fuel Focus, Natural Resources Canada, the average retail price for regular gasoline in Canada during 2001 was \$0.69 per litre, which included taxes³⁰. This amounted to 1,739 liters of gas for the typical elderly couple in 2001, which surpasses MBM's estimated 1,500 liters by an ample margin. For these reasons, we did not see any reason to tailor the MBM's procedure to the elderly. We estimated the cost for a single elder to own and operate a private automobile to be proportionally lower than the couple value by the same percentage as the Elder Standard (that is, 18% lower).

E MISCELLANEOUS

E.1 Sarlo, MBM, the National Council of Welfare and the Elder Standard's Miscellaneous Costs

The Elder Standard included a miscellaneous component to allow for all other essentials, such as clothing, paper goods, cleaning products, household items, personal hygiene items and telephone service. The miscellaneous category does not cover costs such as recreation, entertainment, savings, debt repayment and gifts. They set the cost of this category equal to 20% of the first four categories, a rate that they estimated from reported spending by the elderly on these goods.

Returning to Table 10, we can see that Sarlo's Basic Needs Poverty Line had priced each miscellaneous item separately: clothing, telephone, cleaning supplies, furniture and personal care. His actual "miscellaneous" component was a modest \$100 in 1997. We will next compare the Elder Standard's 20% to the corresponding percentage in Sarlo's Basic Needs Poverty Line; that is, the sum of the miscellaneous expenses as a percentage of the total cost of the four main components: food, shelter (including home insurance), transportation and health care. To determine this corresponding percentage, we calculate the ratio of the total cost of clothing, telephone, cleaning supplies, furniture and personal care over the total cost of the four main categories. In Sarlo's Basic Needs Poverty Line for Montreal, Toronto and Vancouver in Table 10, the ratio was 29%, 22% and 21%. Clothing alone constituted 15%, 11% and 11% of the 29%, 22% and 21%, respectively. The clothing needs of the elderly are likely smaller than the members

³⁰<http://www.fuelfocus.nrcan.gc.ca>. We calculated this average price from the 2001 weekly prices provided on the website.

of the reference family where the parents are working and children are continuously growing. Bearing this in mind, the 20% estimate appears more reasonable. In addition, Sarlo assumed only apartment accommodations for his basic needs threshold. In Appendix B, the expense of purchasing major appliances (stove, refrigerator and clothes washer and dryer) in rented apartments was already included in our cost of shelter. Our approach of including major appliances in the shelter cost of tenants in the denominator of the ratio, rather than as a part of Sarlo's furniture and equipment in the numerator, also gives further justification to choosing a lower percentage to represent miscellaneous costs. Further, the necessary expenses of the miscellaneous components are likely higher to support the growth and development of children than for seniors. For example, more clean-up and school supplies are necessary for the care of children. In addition, miscellaneous expenses, including clothing, are cheaper for seniors as a result of not working and many basic items would be carried over from before retirement, eliminating the need to purchase them while retired.

The alternative basket presented by the National Council of Welfare (1999), which was priced for the reference family living in Vancouver during 1996, had a miscellaneous ratio of 21% if we followed the same ratio calculation outlined above, 8% of which was for clothing. To assign costs to the "miscellaneous" categories, it relied on reported expenditure data to price the cost of furnishings and equipment, clothing and personal care. It determined the cost of telephone charges, cleaning supplies and paper products by building and pricing a basket of individual items. Like Sarlo, its measure was intended for a reference family with growing children, whose needs typically grow and change much more dynamically in these categories than for a family of adults and seniors without children.

The MBM also had an "other goods and services" component, which allowed for personal care items, household needs, furniture (except fridge, stove, washer and dryer), telephone service, postage stamps, religious and charitable donations, school supplies and some reading material, recreation and entertainment. Its objectives were less modest than the Elder Standard since it allowed for gifts and recreation. Finally, it did not include health care spending in its measure. As a consequence to these differences, its percentages are both significantly larger than and difficult to compare to the Elder Standard's estimate.

E.2 Pricing the Miscellaneous Cost

Again, we chose to follow the Elder Standard for consistency as well as the reasonableness of the assumption. We realize that lumping all such items into one

category is vague, but it also allows for the fact that, owing to the range of possible health conditions and personal circumstances, the personal needs of the elderly are very diverse. We felt that listing and pricing each item would not add value. For example, an elder living with or near his/her offspring could have no need for a long-distance telephone plan, while an elder living away from his/her children and grandchildren could consider a long-distance telephone plan to be a necessity, perhaps more so than other age groups, and would consequently cut down on other costs to allow for it. A stronger example would be the exceptionally different personal needs of an elder who is bed-ridden, but continues to live peacefully at home for years, versus one who remains healthy and active.

F HOME-BASED LONG-TERM CARE SERVICES

F.1 Home-Based Long-Term Care Services Overview

Activity limitations owing to long-term health problems or physical conditions can impair a senior's ability to perform necessary daily activities. In such circumstances, additional help becomes a necessity. This section examines the out-of-pocket costs associated with long-term health problems. We begin by looking at the current state of long-term help for Canadian seniors by making use of a recent comprehensive report by Turcotte and Schellenberg (2006) that draws a portrait of the present situation of seniors in Canada. The following three paragraphs are in reference to that paper.

In 2002, among the Canadian seniors who were living in private dwellings and were aged 65+, over a quarter obtained assistance with their indoor household work, outdoor household work, shopping, transportation or personal care (Turcotte and Schellenberg, 2006). The proportion was certainly age-related, and amounted to 16% of seniors aged 65-74, 34% of seniors aged 75-84, and 60% of those aged 85+. Finally, Turcotte and Schellenberg (2006) explained that 2% of seniors living in private dwellings did not receive care although they felt that they needed it on account of their long-term health condition.

In 2003, among seniors aged 75+ who were living in private dwellings, 13% needed a hand with preparing meals, 5% with moving inside their homes and nearly a quarter to do everyday housework (ibid). In the same year, 10% of seniors needed help with personal care such as washing, dressing, eating or taking medication, while only 1% of people aged 25-54 required this type of assistance.

Seniors find help and support from a variety of sources, including a spouse,

family, friends, as well as formal sources such as the government, paid-employees and non-governmental organizations (ibid). Among those seniors who received assistance in 2002 owing to their long-term health problem, over 70% obtained it from informal sources while just under 50% relied on formal sources. Turcotte and Schellenberg (2006) also observed that as seniors aged, their dependence on formal care increased. In this section, we are concerned with the out-of-pocket expenses associated with formal care.

F.2 The Elder Standard's Home-Based Long-Term Care Service Cost

The Elder Standard report indicated that 65-year-old Americans in 2006 will require an average of three years of long-term care assistance in their lifetimes, but with a varying need from year to year. Consequently, rather than include the cost of home-based long-term care as a fixed component of the basic Elder Standard threshold, it was incorporated as an add-on component owing to the inconsistency in the frequency of its need. In addition, there is variety in the desired level of care. As a result, the Elder Standard further constructed and costed three long-term service packages that each reflect a different level of help: low, medium, and high. The low service package assumed that the elder requires six hours of paid assistance per week, the medium package specified 16 hours per week, and the high package specified 36 hours per week. According to the Elder Standard's classifications, a senior who received the high level of care would be nursing-home eligible. The types of assistance were personal care (bathing, dressing, eating, toileting and getting around the home), homemaking assistance (laundry, food shopping, meal preparation and housekeeping), the cost of a case manager who assesses, coordinates and monitors the client's needs, the cost of personal emergency response system, the cost of assistive devices and supplies, and the fees for adult day health care when available (this was included only as an option in the high service package). The Elder Standard report built the cost of each package using data, surveys and interviews with state and federal agencies, trade associations and numerous agencies, providers and stakeholders.

F.3 Pricing the Home-Based Long-Term Care Service Cost

From the outset, we expect the costs of home-based long-term health services to be generally more affordable in Canada than the US. For example, in Nova Scotia,

the Department of Health Continuing Care Branch offers free personal care and homemaking assistance to eligible Nova Scotians with an income under \$18,000 per year. For those with an income above this amount, the services are offered at \$10.68 per hour, which is more than 40% less than the public rate quoted in the Elder Standard report (based on 1 US\$ = 1 Cdn\$). In addition, the services of a nurse is free for eligible Nova Scotians regardless of their income.

Every five years in Canada, Statistics Canada conducts a Participation and Activity Limitation Survey (PALS) that collects data on Canadians whose health limits their everyday activity. PALS 2001 surveyed a sample of those individuals who responded in the affirmative to two general filter questions in the 2001 Census on activity limitations and long-term disabilities. The PALS contained questions on how often the respondent receives help in his/her daily activity from an organization or agency, the frequency of the help and the overall out-of-pocket cost for the help received. Another feature of the PALS that suits our study is that it surveyed only those individuals who live in private and non-institutional collective households.

To assess the typical cost of home-based long-term health services in Canada, we rely on the 2001 PALS. From this survey, we are able to measure the typical expenditure on these services by elderly Canadians. To get actual costs, we limit the data to the elderly whose health condition necessitated that they pay for assistance in their daily activities and who did not receive any reimbursements from the government, private insurance or other sources. We make use of the data collected in Section C of the survey, where the questions focused on “the use of, need for and costs of help with everyday activities and disability-related health needs”. These daily activities included preparing meals, everyday housework, heavy household chores, getting to appointments, running errands, personal finances such as paying bills, personal care, medical treatment at home such as injections (including requiring specialized nursing care) and help with moving about within the respondent’s residence.

Owing to confidentiality laws, Statistics Canada could not provide the raw data and therefore the actual division of data was carried out by Statistics Canada under our directions³¹. We had wished to follow the format of the Elder Standard’s three care packages; on account of the data suppression³² that occurred when we

³¹A special thanks to MacKenzie from Statistics Canada for his prompt and valuable assistance. Throughout this section, we reference his observations on the raw data, his general insight and his recommendations to our approach.

³²Suppression occurred when there was less than 10 data points for a particular category or when data was regarded as unreliable owing to its high variance.

attempted three level-of-care categories, however, we were only able to divide the respondents into two categories - high and low - and we were obliged to drop the minimum age from 65 to 55.

The PALS respondents were asked the frequency of the formal care that they received. The daily activities that we use to classify the respondent's level of care are: preparing meals, everyday housework, heavy household chores, personal care, medical treatment at home and help with moving about within the respondent's residence. We allocate respondents into the *low* and *high* categories by assigning points to each individual based on the frequency of help received³³. In our point system approach, each point reflects the approximate number of days per week that the respondent received care for a particular activity. More specifically, we assign seven points to each "every day" response, two points to each "at least once a week" response, and half of a point to each "less than once a week" response. This approach is suitable for all the activities listed above with the exception of personal care, where the response format was slightly different than the other categories. The respondent was asked to mark the actual number of days per week that they required help with personal care; accordingly, we assign one point to each day. We tally the points for each respondent. Respondents who require daily help with four activities or more per day, and thus have a score greater than or equal to 28 (7 x 4), are assigned to the *high* level-of-care category, while those requiring less and consequently have a score below 28 are assigned to the *low* level-of-care category. After choosing the "four activities per day" as the point of division, we also found that 28 is the median score for the entire group³⁴, making the decision rule both a sensible choice and consistent with the typical level exhibited in the data.

The respondents were asked the *total* out-of-pocket cost spent in the last 12 months on receiving help. They were given an option of providing an actual figure or choosing a range:

- Less than \$200;
- \$200 to less than \$500;
- \$500 to less than \$1,000;
- \$1,000 to less than \$2,000;

³³MacKenzie contributed to the development of this approach after our originally constructed approach resulted in excessive data suppression.

³⁴MacKenzie made this observation from the raw data.

- \$2,000 to less than \$5,000;
- \$5,000 or more.

As we noted above, confidentiality laws barred us from receiving actual expenditure data. By special request, we could only obtain from Statistics Canada the range that each response fell into and the average response above \$5,000. Within each range, we assume the midpoint value as the reported cost. This distribution of results is highly improbable, but it is the best approximation given the limitations of this data set. With regard to our treatment of the above \$5,000 expenditures, we select the average expenditure since, as we explain in Appendix C regarding medical expenses, it is unlikely that people would elect to pay much more than necessary on care that arises from medical conditions when paying out-of-pocket and, in this section, with no subsidies. In addition, we removed a few extreme cases in the above \$5,000 category where the reported costs spent on care were between 25 and 44 times higher than the annual income for the entire household³⁵. Table 20 provides the assumed expenditures and the number of respondents from the low and high categories who selected each range. We calculate the average out-of-pocket expense for each level-of-care category by multiplying the number of respondents (column (ii)) by the specified cost in each range (column (i)) and dividing the summed total (the sum of the products of columns (i) and (ii)) by the total number of respondents (the sum of column (ii)). The resulting annual expense is \$989 for the low level-of-care category and \$12,951 for the high level-of-care category.

G Adjusting the Rental Prices to Account for Major Appliances

Michaud et al. (2004) detailed the MBM’s method to “normalize” the rental prices across the provinces by adjusting for the impact of the inclusion of appliances. In short, the MBM relied on Canadian Census data to produce median rents - which included the cost of utilities - and adjusted for the cost of appliances using the Labour Force Survey (LFS) Rent Supplement and the SHS. It made the adjustment by adding to the median rental price:

- the percentage of renters in the particular province who did not have the particular appliance included (from the LFS rent supplement) ×

³⁵MacKenzie observed these outliers in the raw data and recommended their removal.

Out-of-Pocket Expenditure Range	(i) Assumed Expenditure	(ii) Counts	
		Low	High
Less than \$200	\$100	58,530	0
\$200 to less than \$500	\$350	107,220	1,830
\$500 to less than \$1,000	\$750	82,010	0
\$1,000 to less than \$2,000	\$1,500	71,190	0
\$2,000 to less than \$5,000	\$3,500	41,360	2,930
\$5,000 or more	\$15,870 (Low) \$17,180 (High)	13,060	12,000

Table 20: Results for Home-Based Long-Term-Care Assistance for People Over Age 55 Needing Two Levels of Care - Low and High. Source: Statistics Canada, 2001 PALS, and author's own calculations.

- the average annual expenditure on that appliance by Canadian households with two parents and two children in the second income decile (from the SHS).

Table 21 lists the percentage of one-bedroom apartments that included a fridge, stove, washer and dryer for each province from June to December 2000. This table is the same as Table 4 from Michaud et al. (2004), except here we are examining one-bedroom units as opposed to two- and three-bedroom units. As Michaud et al. (2004) noted, the reported percentages show that including appliances in rental properties is not consistent among provinces. In particular, a much smaller proportion of Quebec apartments included appliances.

Appliance	NFLD	PEI	NS	NB	QC	ON	MB	SK	AB	BC	CND
Fridge	83	96	92	86	33	91	96	92	94	93	77
Stove	83	94	91	84	34	90	94	90	93	94	77
Washer	16	11	15	12	5	9	15	34	17	13	12
Dryer	14	9	13	11	5	8	14	33	17	12	11

Table 21: Percentage of one-bedroom rental units with various appliances included in the rent, June to December 2000. Source: 2000 LFS rent supplement

We rely on the same average expenditure on each appliance as given by the MBM - that is, the average expenditure by the reference family in the second

income decile of the SHS. Table 22 re-lists these costs, which were originally published in Table 5 in Michaud et al. (2004).

Average	97-99	1997	1998	1999
Refrigerator	51	50	40	64
Stove	16	5	22	21
Washer and dryer	48	45	57	43

Table 22: Annual expenditure on various appliances by households in the second income decile 1997 - 1999, adjusted to 2000 constant dollars. Source: Table 5 from Michaud et al. (2004).

Although the average expenditures in Table 22 were associated with the MBM reference family, we chose to use them for our elderly single and couple. One reason for the simplification is that the values in Table 22 represent the approximate annual costs of necessary major appliances whose prices are the same despite the age or household size of the purchaser, although it could be argued that an elderly couple would need a smaller sized fridge and the life-span of their appliances could be longer owing to less wear-and-tear. A second basis for our simplifying assumption is the triviality of their costs relative to the other expenses and their minimal impact on the final thresholds - their main purpose is to give an approximate figure to the cost of the appliances. Adjusting the annual average expenditures in Table 22 to 2001 dollars using the Canadian CPI³⁶, and multiplying by the percentage of renters whose rents did not include each appliance, we arrive at the appliance adjustment in Table 23³⁷ for each of our respective cities (for a fuller description of this procedure, see Michaud et al. (2004)).

ADDITIONAL REFERENCES FOR THE APPENDICES

Cossette, Lucie, and E. Duclos. 2002. A Profile of Disability in Canada, 2001. Statistics Canada Catalogue No. 89-577-XIE. Ottawa.

Demers, Virginie, M. Melo, C. Jackevicius, J. Cox, D. Kalavrouziotis, S. Rinfret, K. H. Humphries, H. Johansen, J. V. Tu, and L. Pilote. 2008. Comparison

³⁶Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue no. 62-001-X.

³⁷We use the average of the washer and dryer percentages from Table 21.

City	Fridge	Stove	Washer and Dryer	Total
Halifax	5	1	42	48
Montreal	35	11	47	93
Toronto	3	1	41	52
Calgary	5	1	45	45
Vancouver	3	1	43	47

Table 23: Annual Appliance Rent Adjustment. Source: Author's own calculations.

of Provincial Prescription Drug Plans and the Impact on Patients Annual Drug Expenditures. *Canadian Medical Association Journal* 178(4): 405-9.

Dietitians of Canada and Community Nutritionists Council of BC. 2001. The Cost of Eating In BC - The challenge of healthy eating on a low income.

Grootendorst, Paul. 2002. Beneficiary Cost-Sharing under Canadian Provincial Prescription Drug Benefit Programs: History and Assessment. *Canadian Journal of Clinical Pharmacology* 9(2): 79 -99.

Nova Scotia Nutrition Council and the Atlantic Health Promotion Research Centre. 2003. The Struggle to Feed Our Families in Nova Scotia. *Brochure*, Halifax, NS.

Nova Scotia Nutrition Council and the Atlantic Health Promotion Research Centre. 2006. Working Together for Ongoing Food Costing & Policy Solutions to Build Food Security - A Proposed Model of Ongoing Food Costing in Nova Scotia. *Food Costing Working Group of the Nova Scotia Participatory Food Security Projects*, Halifax, NS.

Paris, Valerie, and E. Docteur. 2007. Pharmaceutical Pricing and Reimbursement Policies in Canada. *OECD Health Working Papers*, Paris.