Leroy O. Stone *Editor*

Key Demographics in Retirement Risk Management

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Preface

Since the dawn of the new century, there has been a steady stream of literature with the central theme that individuals and families face increased responsibilities in managing their retirement-related risks. At the same time, the task of achieving effective risk management has become more complex. In 2011, this theme could be found recurrently in the general media, as well as in documents issued by government agencies in Australia, Canada, the United Kingdom and the United States.

In thinking about the increased responsibilities of individuals and families to manage retirement-related risks, financial management and health issues come to mind. For decades, professionals have been providing services pertaining to these risks, and the related writings are voluminous. However, there has been little attention to what we call 'comprehensive retirement-related risk management'. Here the word 'comprehensive' means more than simply a sequential list or collection of these activities.

A new service offered by Manulife Financial (which they call 'Product Allocation') provides a useful illustration. The brochure for this service emphasizes that allocation strategy goes far beyond identifying a collection of assets to show the different avenues an individual or family might pursue regarding retirement savings. Essential to the strategy is the linkage of information concerning these avenues. This linkage allows pre-retirees to examine the overall pattern and raise questions about the sustainability of the savings programme as a whole.

The pursuit of comprehensive retirement-related risk management involves linking information about risk management activities across multiple life domains. This helps persons to confront important questions about whether they have achieved the best available allocation of their scarce resources, and whether the priorities that they have established among alternative risks are the most helpful for their circumstances. We need to state only one reason why this is a significant idea in persons' lives: the available resources are rarely sufficient to allow one to address all the apparent risks.

It is not a new idea that people are spreading their scarce resources across an array of risk management activities. However, what is the proportion of individuals who are explicitly thinking about the patterns of their specific arrays of risks,

including the linkages among the risks? What is the proportion of individuals who are conscious of how their allocation of resources to one set of activities affects their capability to address risks in other areas? That is, although we all do risk management across several domains, for how many of us is the *pattern* of resource usage across risk management activities simply accidental?

Reflection upon this topic brings up important related questions: What proportion of the adult population is conscious of the value of approaching risk management comprehensively? What proportion is executing comprehensive risk management effectively? What proportion has developed the requisite networks of knowledge and skill? In which population segments does one often find best practices, and in which segments is special assistance needed to help people address even the most basic issues?

I have searched for and failed to find surveys that were designed to provide the data to answer these questions. Many surveys have ascertained what people are doing in specific areas of risk management such as that of finance or that of health promotion, but I have not found any that probes into population behaviour and competence in the type of *comprehensive* risk management cited above. The survey that most closely fits the specifications for data concerning comprehensive retirement-related risk management is the 2009 survey of the Society of Actuaries (SOA) of the USA. The 2007 Retirement Survey of Desjardins Financial Security (a major Canadian financial services firm) and the 2007 General Social Survey of Statistics Canada are also helpful. However, these data sources permit an analyst to deliver only indirect evidence concerning some of the essential activities and capabilities in *comprehensive* retirement-related risk management. In addition, most of the available surveys yield sub-samples of a few hundred employed pre-retirees, and this number is too small to permit reliable estimates of conditional probabilities[1] for key behavioural outcomes in retirement-related risk management. These deficiencies represent important information gaps.

In presenting this book, I hope to contribute modestly to insights about what needs to be done to bridge these and related information gaps that are important in both the public and private sectors. Filling these information gaps will require the pursuit of advances in theory, data development and empirical research about aspects of *comprehensive* retirement-related risk management.

The planned contribution has two dimensions, one substantive and the other methodological. In the former dimension, the book addresses a variety of topics. They begin with a multivariate analysis of factors in pre-retirees' decisions to delay retirement. The results of this work lead me to predict that retirement-related risk management will gain permanently enhanced priority in the lives of millions in the post-World War II generations. The text then moves to focus on another major aspect of risk management, presenting an analysis of factors that help to determine usage of the services of professional financial advisors. Discussion of the results

[1] These are probabilities of behavioural outcomes *based on a set of relevant prior conditions*, the latter being combinations of persons' attributes.

includes suggestions about implications of the findings. Then follow descriptions of distinctive population segments in the conduct of risk management activities, based on a composite indicator that measures the conduct of multiple activities by survey respondents. In addition, the book presents an analysis of gender differences in population performance using another composite indicator of preparedness to meet the challenges of retirement.

The methodological aspect of the book's contribution lies in technical demography, also known as 'demographic analysis'. We describe and illustrate procedures to identify distinctive population segments based upon the simultaneous use of multiple attributes that are important in explaining a chosen outcome variable. These segments have very high or low probabilities of showing certain behavioural outcomes relevant to retirement-related risk management. When these segments are large, they are called 'key demographics'.

The key demographics cannot be adequately enumerated without the examination of data. However, the data to support this examination are not available through routine cross tabulations because sample sizes are too small. The requisite data are by-products of the estimation of the parameters of multivariate prediction models. This book illustrates the development of these by-products, providing a toolkit of techniques that are usable in all organizations around the world where professionals use demographic analysis in support of their programmes. Researchers and graduate students who specialize in the scientific study of population will find this toolkit useful in situations where small sample sizes inhibit their usage of more traditional techniques for studying population behaviour.

The substantive and methodological materials cited above have been developed for audiences comprising researchers, educators and graduate students primarily. The researchers whom I have in mind include both those based in universities and those who are in work groups that support the outreach activities of organizations in the private and public sectors. The relevant outreach activities are parts of projects that target large multidimensional *population segments* for educational, other service delivery and marketing projects. These projects take place in the business, public and voluntary (NGO) sectors.

Retirement and financial planners who advise clients concerning personal matters are most likely to find direct support for their advisory work in Chaps. 4 and 5. The outcome variables of the analyses in these chapters represent specific risk management domains: delays of retirement and utilization of professional financial advisors. Chapter 5 presents multivariate analyses of factors that help to determine three linked outcome variables: (1) the development of a sense of need for help in addressing financial management challenges, (2) the degree of trust in professional financial advisors and (3) the actual utilization of these advisors. These analyses draw upon surveys taken in both Canada and the United States.

Leroy O. Stone, Ph.D.

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Leroy O. Stone, Ph.D.

Contents

List of Figures

List of Tables

Chapter 1
Introduction: A New Priority for Personal Retirement-Related Risk Management

Leroy O. Stone and Jacques Légaré

With special assistance from Bob Baldwin

Employee confidence about achieving a comfortable life in retirement has remained low since the financial crisis, despite the rebound of stock market prices and other signs of economic recovery. An aspect of this fall in confidence is the growing proportion of workers who realize that they face a complex challenge in attempting to secure a good life in retirement. The complexity of their challenge has been increasing because of some decades-long trends whose effects have been intensified by the crisis. This chapter briefly reviews pertinent features of the long-term trends. The chapter also defines key concepts used repeatedly in the book, placing a special highlight on the concept of "comprehensive retirement-related risk management" seen from the viewpoint of persons and their families. The chapter closes with a description of the architecture of themes developed in the later chapters. These three focuses of the chapter help to set the context for the statistical analyses that follow.

1.1 Introduction and Key Concepts

Everyone knows that financial markets were in much better shape in early 2011 than they were in late 2008. Pension fund valuations generally recouped the alarming losses experienced during the 2008 financial crisis, and indexes of the economy have been pointing to continuing improvement. What a surprise then that the Employee Benefit Research Institute's Retirement Confidence Survey (RCS) for

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2011 led to the report that its measure of employee confidence about achieving a comfortable life in retirement had fallen to its lowest point over the 21-year history of the RCS (see Helman et al. 2011).

This is the second big fall in worker confidence shown in EBRI's time series of confidence measures. The first one came a short while after the financial crisis was at its worst. And lest one thinks that this was just a reflection of a bad scene in the USA for older workers, Sun Life of Canada reported in March 2011 that its Unretirement™ Index, which measures workers' confidence about their life in retirement, fell by nearly 25% from 2009 to 2010 (Sun Life 2011).[1]

What are the important consequences of these falls in worker confidence? Among them, we hypothesize, is a higher priority being accorded to retirement-related risk management among pre-retired and recently retired populations. This hypothesis leads to the following questions, which seem important in both the private and public sectors. Among the cited cohorts, what is the general level of competence to execute retirement-related risk management? How well are these cohorts engaged in risk management activities? Where are the distinctive multiple-attribute population segments in which best practices are commonly found? In which segments are deficiencies in competence or activity so serious that the delivery of related support from either the public or the private sectors would be good? Estimates of the sizes, patterns of growth, and regional distributions of these distinctive population segments comprise valuable information in both the private and public sectors.

An aspect of the fall in confidence is the growing proportion of workers who realize that they face a complex challenge in attempting to secure a good future life in retirement.[2] The complexity of the challenge has been increasing because of some decades-long trends. To help set the context for the statistical analyses that follow, this chapter briefly reviews pertinent features of the long-term trends. This review helps to show that the higher profile for retirement-related risk management in our society, now a topic of frequent discussion in the media and among Internet blogs, was not created by the financial crisis alone.

Before continuing with this story, however, it seems to be a good idea to explain what some of the technical jargon used above means. Readers already familiar with the varied usages of the phrase "retirement-related risk management" should jump ahead to the section where we exposit the concept of "comprehensive risk management". What is meant by the phrase "retirement-related risk management"? We give our answer to this question below. The answer begins with a comment on how "risk" and "risk management" will be used here. Our linkage of these concepts to retirement will follow. This will clarify the meaning of the phrase "retirement-related risk management". With this clarification in the background, it seems desirable to

[1]The Sun Life Canadian Unretirement™ Index ranges from 0 (extreme pessimism) to 100 (extreme optimism).

[2]For indirect evidence about large numbers of people suddenly waking up to this reality, see Helman et al. (2011).

develop the concept of comprehensive retirement-related risk management, since this is an area where theory and empirical research are sparse and service delivery is important.

1.1.1 Alternative Meanings of "Risk"

There are at least three distinct usages of the term "risk" in the literature. In the first usage, risk is an uncertain outcome to which a person is exposed. The person may have chosen that exposure, as happens in making an investment, or in making a bet at the horse races, or in participating in certain adventures where accidental injury may be encountered. Thus, the outcome may be positive or negative. Positive outcomes are important sources of growth, rewarding experiences, and helpful discoveries throughout the courses of persons' lives. However, when the context of discussion is life in the Third Age in general, or life in retirement in particular, we are much more concerned with an array of possible misfortunes, accidents, or losses that one may encounter. Since life in retirement is the context of discussion for this book, the text will focus primarily upon adversities that individuals would ideally prepare themselves to face. (For academic literature that dwells more heavily on risks to which people voluntarily expose themselves in the hope for gain, see Lupton and Tulloch 2002a, b; Wint 2007.)

In the second most common usage of the term "risk", it means the probability of encountering an uncertain outcome among the negative or positive classes of outcome mentioned above. This usage is frequently found in work linked to actuarial science and demography, as well as in the fields of investment and finance. (For a survey of many related definitions of "risk", see Wint 2007, p. 28.)

Third, "risk" is also used as a reference to the cost of coping with the consequences of having encountered a loss.[3] This usage often arises in the literature where the writer speaks about the privatization of risk or the socialization of risk. Risk is socialized when, by some government-supported collective arrangements, the costs caused by a loss are managed out of a common resource to which taxpayers contribute. Risk is privatized when the same cost is either passed from government onto the shoulders of private parties or government simply avoids developing any collective arrangement for pooling cost management.

In this text, we adopt the second usage primarily. Under this usage, you are said to be "at risk" of encountering a named misfortune when the probability of that encounter is non-negligible for you. In adopting this usage, we will often refer to the "probability of X", where X is a defined outcome.

[3]Since the late 1980s, a rich literature that deals with different aspects of risk in society has emerged. Dodd (2009) provides a brief introduction to this literature. In this section, the comments focus on terminology, rather than on real-world processes that involve risk. See also Adam et al. (2005) and Wint (2007).

In short, there is a state of confusion in the literature about the meaning of "risk". However, by paying careful attention to the context within which the word "risk" is used, one can usually have a correct understanding of what is meant.

Some authors propose that the expression "speculative risk" be used when risk pertains to exposure to gain. Where the possible outcomes are either no loss or some loss, the term "pure risk" is often used. (For related discussion, see Green 2000; Booker 2007.) In the remainder of this text, the discussion will pertain to pure risk.

1.1.2 Risk Management Steps

In thinking about risk management steps, two distinct contexts need to be recognized. The first context is that in which the concern is about a particular loss. In the second context, one has in mind a network of linked losses. The first context is pertinent to what follows in this section. The second context is applicable in the section below where we exposit the concept of "comprehensive risk management".

Well-organized risk management activities are defined regarding identified potential losses or misfortunes. This identification is followed by suitable risk assessment, which involves gauging the probabilities for different routes by which a specific misfortune might occur, as well as the consequences should it happen. A systematic exposition on risk management steps is presented in Booker (2007). In what follows, we summarize details presented in her book.

The risk management steps fall into three broad classes. The first is avoidance of the risk, which means undertaking activities that are designed to block exposure to the misfortune for all practical purposes. The second is action designed to reduce the probability of its happening. This is often undertaken when for various reasons avoidance is just not feasible.

The third class of steps is management of the cost, if the misfortune should arise. Management of the cost may involve sharing that cost with other parties or transferring all the cost to them. Included here is the purchase of insurance to deal with the financial aspects of the costs, as well as the formation of or entry into a group that is said to "pool the risk".

The phrase "pool the risk" means that a pool of capital required to meet the financial costs is created from contributions of the members as well as from other sources, on the assumption that only a fraction of them is expected to encounter the misfortune. The "pooling of risk" may be undertaken as a government programme or by some private collective arrangements. (The word "risk" is being used in a special sense here because when we speak of the "pool of risk", we really mean the pooling of the resources needed to meet the costs in case the misfortune happens.)

1.1.3 Retirement-Related Risk Management

The phrase "retirement-related risks" refers to risks that have much higher than the average probability of occurring during later life (also known as life in or beyond the life-course stage named "The Third Age"[4]). For those in whose lives the concept of retirement is meaningful, we can think of these as the risks that are of special concern during life in retirement.

While risk management deals with the risks just cited, it is also concerned with *linkages among risks*, especially where the linkages are much more likely in retirement than during the working years. A later section will deal with this topic in greater detail.

1.1.4 Types of Retirement-Related Risk

What are the kinds of peril or misfortune that are of particular concern in retirement-related risk management?

In 2005, the Society of Actuaries in the USA published its now well-known list of 15 kinds of losses or misfortunes that give rise to special concerns in retirement-related risk management. Many articles in the literature point to this list as the touchstone of general ideas about retirement-related risks. The Society of Actuaries' list forms the basis of the following items.[5] (For related commentary, see the Society's booklet entitled *Managing Post-Retirement Risks: A Guide to Retirement Planning*—Society of Actuaries 2008, and Sondergeld 2003).

- Longevity risk: living so long that either your savings are exhausted or you outlive key family members and other important persons in your informal support network.
- Inflation risk: the price of a given basket of goods and services continually increases, so that a fixed amount of cash is less and less able to purchase that basket.
- Interest rate risk: the amount of income received from a fixed amount of interest-bearing capital can decline sharply when the interest rate falls.
- Investment risk: there is a fall in the price of capital that has been purchased as an investment (e.g. stocks, bonds, investment property, and saleable financial

[4]Peter Laslett (1989) introduced the concept Third Age. It refers to the stage of the life course when people become increasingly concerned with issues about their quality of life when they are no longer preoccupied with family building and are not regarded as part of the society's main workforce; yet they often are still capable of doing productive work of some kind.

[5]Some items bear the same names as those on the Society's list. These names were widely used prior to their appearance on that list. Elsewhere in what follows we benefit from the ideas in the Society's list, but we provide different commentary about the nature of the items.

assets that form parts of tax-assisted retirement savings plans such as 401(k) plans in the USA or Registered Retirement Savings Plans in Canada).
- Failure of a business: there is a loss of retirement funds due to the failure of the business that provided access to those funds (e.g. failure of the retiree's own business, or that of a pension plan sponsor where the pension assets were not segregated from the business operations).
- Job loss: loss of a job that was a source of retirement income.
- Loss due to public policy changes: reduction of actual or expected income or in-kind benefits due to changes in government policies (e.g. tax increases, new fees for access to government services, lower government-financed benefits, tightened means tests).
- An unanticipated health breakdown creates a need for enhanced health care and/or much higher levels of spending on health.
- Unavailability of needed caregivers or of facilities that permit the performance of required caring services, even if one can pay for them.
- Onset of an inability to do the basic activities of daily living without assistance.
- Inability to gain access to new or changed housing facilities required because of the arrival of major life events.
- Loss of a spouse or partner due to death, divorce, or marital separation.
- Arrival of unforeseen personal-care responsibilities (e.g. a spouse suddenly needs a new and demanding kind of care).
- Falling victim to theft, fraud, or misleading advice.

Although the Society of Actuaries' list of risks is justifiably famous and extremely useful, at least two additional types of risk need to be mentioned. They include a critical lack of either knowledge or attentiveness and liquidity risk.

Either a lack of knowledge about or attentiveness to a particular matter can be a major factor in the onset of an important loss. It may be argued that neither critical lack of knowledge nor inattentiveness should be regarded as a risk because the real risk is the pit into which one falls because of that deficiency. However, it is useful to regard this as a risk because of the great variety of possible pitfalls that it might produce. This risk is important because it points to the need to develop certain kinds of literacy, such as financial literacy, as a risk management strategy.

This matter has substantial public policy implications that are now attracting the attention of governments. The retirement literature has dozens of examples of the kinds of difficulties that a person can encounter due to a critical lack of knowledge or attentiveness. Examples are easily found in the areas of knowledge about income required in retirement or the effect of capital-management fees on investment returns. (For related discussion, see Helman et al. 2011; Ambachtsheer 2008.)

All retirees with hard-to-sell assets (because of the lack of a market), or assets they are very reluctant to sell, need to be attentive to liquidity risk. An asset may be said to have a substantial lack of liquidity when it cannot be traded quickly or can be sold only at the cost of a large loss due to failure to find many buyers. Such a lack of liquidity can produce crucial failure in access to cash needed to meet immediate expenditure demands. Management of liquidity risk often involves ensuring that there is a sufficient cash reserve or assured access to loans required to meet such demands.

1.1.5 Comprehensive Risk Management

Corporate discussions of risk management frequently deal with linkages among risks, particularly the dreaded cascading of linked misfortunes. This perspective is also helpful for individuals and families who are addressing their own risk management—what we are calling "personal risk management". Similarly, organizations and professionals concerned with educating and coaching individuals to deal with their risk management challenges are most effective when they help to sensitize their clients to linkages among personal risks. This thought brings us to the subject of comprehensive risk management.

Approaching the possible losses comprehensively means that you will identify and prioritize them across a wide spectrum, taking into account your assessment of their probabilities and the consequences should you meet them. Given limited resources, you would then decide which ones will get immediate attention, which ones should get the largest shares of those resources, etc. In addition, it is essential to arrange for periodic review of the threats that you face and your related risk mitigation strategies. The net result is that your limited coping resources are distributed across selected protective actions in a particular pattern (or structure) that represents your own best judgments, with the pattern being reviewed periodically. Thus, comprehensive risk management is much more complex than looking at individual possible losses and making isolated decisions about them one by one.

The foregoing review of concepts should convey the idea that retirement risk management is a large and multifaceted topic. Some aspects of its implementation are matters of recurrent concern to a high percentage of persons making the life-course transition into the Third Age, and this has been true for decades. However, available evidence suggests that people tend to approach this topic in such a way that important sources of risk may not be addressed and may be even invisible. Moreover, in addressing a subset of risks, we may often fail to adequately take their interdependencies into account. Related areas of risk are addressed as if they are independent stovepipes. Yet, modest amounts of attentiveness and access to basic information seem to be sufficient to allow a person to appreciate the desirability of pursuing comprehensive risk management.

Unfortunately, its achievement has been getting more and more complex because of developments that have been unfolding in our society over decades. There is much in recent literature about these developments, but a brief survey of them forms an important part of the context for the remaining chapters.

1.2 A Brief Survey of the Systemic Changes That Have Helped to Make Personal Retirement Risk Management More Complex

In a nutshell, long-term changes or developments in the demographic, economic, and cultural environments that have gathered steam, primarily since the 1980s, have combined to create new levels of complexity and uncertainty regarding the

challenges of securing adequate income and an otherwise satisfactory life in retirement. The following is a list of highlights among these changes:

- The march of the baby boom generation towards the prime ages of retirement, along with the improving longevity of the older population, have challenged the sustainability of government-supported income transfer and other benefit programmes aimed at the elderly.
- The increasing length of life in retirement has brought more than one type of longevity risk to prominence (as discussed in the next section).
- The composition of workplace pensions has shifted in ways that increase the exposure of persons' retirement incomes to financial market risks.
- High capital-management fees jeopardize the achievement of adequate rates of return in persons' pools of retirement savings.
- Among a collection of primarily liberal democracy countries, namely, Australia, Canada, France,[6] Great Britain, and the USA, at best one-half of workers have access to workplace pension plans.
- Increasing ethnic and cultural diversity in the countries' pre-retired populations raises the proportions of people facing very difficult challenges in retirement-related risk management.
- An elevated rate of family breakdown in older age further complicates the task of achieving effective retirement-related risk management.
- In some of the countries cited above, real hourly earnings per employee have been mostly stable for decades, and households have accepted higher debt levels in order to maintain their desired standard of living. One result is that as the retirement years approach, they have less room to manoeuvre in building up adequate savings for retirement.

1.2.1 Multiple Longevity Risks

The preceding discussion has cited improving longevity in the older population as one factor that is helping to create pressure upon government financing of supports to the elderly. The response to this pressure has sometimes involved policy changes that affect persons' risk management challenges.

Another aspect of improving longevity gets much attention in the literature on personal retirement risk management. It is the issue of people living so long that they exhaust their private financial resources. Other important potential losses associated with prolonged longevity include (1) major functional breakdown, (2) the loss of almost all the significant others in one's life, and (3) the depletion of sources of informal social support (of course, items 2 and 3 are linked.) These are often serious developments for quality of life. Sometimes they are grave enough to bring on or intensify depression and

[6]France falls outside the liberal-democratic class, using the typology of Esping-Anderson (1990).

abandonment of the will to live. Thus, longevity risks are diverse! Improvements in longevity mean that a rising proportion of the older population is confronted with the challenge of risk management relative to this variety of risks.

1.2.2 Reduced Collective Security Based on Workplace Pensions

Pension reforms in various OECD countries in the 1990s and into the twenty-first century have increased the role of workplace pension plans and employer-based individual savings programmes. (For related discussion, see EU The Social Protection Committee 2008; Baldwin 2008; Munnell and Quinby 2009.) However, among the collection of countries under review here, the percentage of employees with pension coverage has, over a series of decades, fluctuated around a flat trend line or has a trend line with a gently downwards slope.

In addition, a common pattern among these countries is a trend towards reduced bearing of risks by employers, with increased risks being passed to the shoulders of persons and their families. A declining offer of defined benefit (DB) pension plans is a principal source of this reduction of employers' risks. At the same time, there has been growing reliance upon employer-sponsored defined contribution (DC) pension plans and other retirement savings plans. Under both types of plans, the employee receives no promise about the level of income they will produce. The future market values of the plans will determine the incomes they will yield. The reduced access to DB pension plans is not universal, however. Ponds and van Riel (2006) point to the Netherlands as one country that does not show this declining trend. They advance the hypothesis that widely shared culture in the Netherlands places a strong premium on collective security. (Chapter 2 discusses alternative approaches to collective security in public policies among OECD countries.)

1.2.3 Prevalence of Non-standard Employment

The Netherlands is also noted for having a very high percentage of employees enrolled in pension plans. The lower coverage levels that are common elsewhere are explained partly by the substantial prevalence of non-standard employment. Experts on this topic generally seem to define "a standard job" as one that provides full-time employment as employees holding an indeterminate (so-called permanent) position. Other jobs are non-standard, which means a very heterogeneous collection of types of employment.

Although many of these jobs represent stable full-time employment (e.g. doctors), or may be chosen as part of a general lifestyle strategy, they represent much lower than average access to pension coverage. This takes on added significance when, as it happens in some countries, there is growth in the proportion of jobs that are either casual or are based on short-term contracts. (See Townson (2006) for a related discussion.)

Among the countries being considered here, the data suggest mostly stable proportions of total jobs that are non-standard since the early 1990s. For Australia, however, Kelly and Harding (2004) found this proportion growing through 2004. Focusing on non-standard jobs in America, Farr (2009) points to a spread of casual and contract-based employment where there are few in-kind employee benefits and no employer-provided pension plans. Farr claims that employers' increased usage of contracted labour services is a worldwide trend.

In Canada, just over one-third of employees are in non-standard employment. This percentage has been roughly stable since the early 1990s, but the proportion of these jobs that can be considered to be precarious jobs has been on a sustained although slight increase (Townson 2006). Thus, an aspect of structural change in the pattern of utilization of labour inputs to the economy has tended to increase the proportion of Canadians, primarily men, for whom effective planning for retirement is becoming a greater challenge due to their occupancy of non-standard jobs.

Generally, the spread of these jobs in a society is an important systemic change. It tends to increase the proportion of the adult population that has severe problems in achieving adequate retirement-related risk management due to poor access to workplace pension plans. That spread is apparent in some of the countries examined here, and around the world non-standard employment is more likely to be the norm rather than the exception.

1.3 Preview of the Remaining Book Chapters

As suggested in the opening paragraphs, this book is primarily an exploratory socio-demographic analysis focused upon the identification of multidimensional population segments that are distinctive regarding the practice of retirement-related risk management. Chapters 1, 2, 3, and 4 present aspects of a context for the book's main focus. Chapter 5 is a "bridging" chapter. It provides multivariate analyses of trust in and usage of professional financial advisors. These analyses form a part of the basis of our procedure for identifying distinctive multidimensional population segments, and Chap. 5 briefly introduces the procedure.

This chapter has reviewed important features of long-term systemic trends that have contributed to the growing complexity of the challenge of achieving effective personal risk management in retirement. In doing so, it does not address some highly relevant features of the evolving social policy context. Chapter 2 fills this major gap. Here, Terrance Hunsley presents a selective review of aspects of long-term changes in the policy context relevant to risk management in retirement. Chapter 2 covers both North America and Europe.

Chapters 3 and 4 continue the presentation of contextual materials but with new focuses. Chapter 3 presents the outline of a theory about the dimensions of retirement preparedness. There is little indication in the literature that experts have reached a consensus about the meaning of "preparedness for retirement". A dividing line exists between those who would focus almost entirely on questions dealing

with standard of living and others who pay much attention to non-economic aspects of achieving a good life in retirement. Chapter 3 falls in the second group. Two experts with decades of experience in providing retirement-related services—Carien Jutting, and Av Lieberman—present in Chap. 3 a comprehensive overview of the interrelated challenges of planning effectively for life in retirement.

Chapter 4 has been designed to illustrate how older workers' responses to the crisis indirectly provide evidence concerning its effects in raising the profile of retirement-related risk management within the pre-retired population. It presents a statistical analysis of the decision to delay retirement in the aftermath of the financial crisis.

Chapter 5 illustrates the process we propose for identifying distinctive population segments (key demographics) regarding risk management activities. The illustration focuses on one type of risk management activity—seeking professional advice in the management of one's financial affairs. An essential step in the identification process yields information about the relative importance of factors that help to explain the use of professional financial advisors. The discussion section of Chap. 5 uses this information, in concert with the findings of other researchers, as a basis for suggesting some lessons for organizations engaged in designing retirement planning services.

Chapters 6 and 7 comprise the core of the book. Chapter 6 presents in detail the network of procedures used to identify key demographics. This presentation makes use of data from surveys conducted in Canada. Chapter 7 contains related materials from the Health and Retirement Survey in the USA. As already noted, an essential feature of key demographics is that multiple attributes are used to define them, and their members have unusually high (or low, as the case may be) probabilities of performing well on our composite indicator of risk management activity. The use of routine statistical cross tabulations to estimate these probabilities is not feasible due to small sub-sample sizes. Although the specific combinations of attributes that comprise these distinctive population segments are based on variables measured in surveys conducted in North America, the discussion of these combinations suggests issues that seem applicable in many other countries.

Chapter 7 presents an analysis of gender differences in an index of preparedness to meet retirement's challenges. The discussion is based on a composite indicator of that preparedness that has been designed by using the 2007 General Social Survey of Statistics Canada. The chapter identifies population segments within which a generally modest gender difference widens markedly. The discussion section presents some implications of the statistical results, and here we cite some gender-related patterns found in our identification of key demographics for risk management within the USA population.

The final chapter attempts to contribute to future development of theory, data, and analyses concerning aspects of risk management pertaining to potential losses during retirement. Chapter 8 identifies areas of possible improvement in information based on statistical data, as well as important social science issues that should be explored by researchers in order to improve the flow of useful information to educators, other leaders, and families concerned with population behaviour in retirement-related risk management.

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Chapter 2
Emerging Policy Directions Affecting Economic Risk

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In a campaign speech in 2008, Barack Obama may have framed an issue common to many liberal economy countries when he referred to the concept of "ownership society", a term often used to refer to a broad policy objective during the Bush administration (McCormick 2008). He suggested that the reality for many Americans was that they were more "on their own" in facing economic risks. Obama was pointing to an outcome of a combination of economic, social, and demographic trends, as well as recent public policy directions. More "ownership" entails fewer supports—either in collective security programmes or in collective management of their economic security interests. Given the need for countries (and thereby, workers) to compete in the global economy, as well as the inevitable pressures on governments to manage costs associated with ageing populations, the question of which risks should be taken on by the individual and the family, and which should be collective or social, is important. Equally important is the role of public policy in ensuring that individuals and families are able to access the resources required to fulfil those responsibilities that are assigned to them.

2.1 The Context in a Nutshell

Over the past 40 years, there has been a convergence of three powerful forces:

- A wave of demographic change brought on by baby booms, baby "busts" (rapid decreases in fertility rates), and increasing life expectancy
- A wave of social change reflected in increased employment of women and the consequent transition to predominantly two-earner families
- A wave of economic change embodied in globalization, deregulation in liberal economy countries, and the revolution in information technology

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This convergence has produced the following outcomes:

- Thirty years of high labour supply
- Labour market turbulence and restructuring
- High levels of unemployment
- Increased educational requirements and attainment
- Increasingly diversified and "non-standard" work situations
- An overarching concern of governments to limit public expenditures and increase economic competitiveness

Since the early 1980s, there has been continuous international discussion about adjusting national policy regimes to the global context, and more recently also to ageing societies. The subject is taken up in several international fora, including the G8 (and more recently the G-20), the European Community (EC), and many others. Perhaps the most consistent, structured, and published discussions have taken place among the member countries of the Organization for Economic Cooperation and Development (OECD).

Governments have tried to encourage opportunistic and competitive enterprise and adaptable workforces. Regional trade pacts, shifting taxation from producers to consumers, harmonizing regulatory systems, reducing trade barriers, and providing employers more flexibility in employment arrangements have been common ways of supporting employers' competitiveness. For workers, the emphasis has been on increasing education and training to help them to be more productive and more proactive in adapting to changing circumstances while providing some measure of security to the victims of economic disruption.

Looking back over the past four decades, recent work by the Policy Research Initiative (PRI) of the Canadian government suggests that the sources of economic security for the working age population have shifted. Workers and families rely increasingly on asset accumulation, human capital, social capital, and family support (Hunsley 2006). Their security is correspondingly less derived from collective bargaining, employer provision of pension and other benefits, and public social security programmes (see Osberg 2009). The transformation is much aided by the now-dominant presence of two-earner families in which one earner has become a de facto economic security blanket for the other.

2.2 Are We Seeing the Emergence of a New Policy Paradigm?

A recent statement of the Commission for the European Communities identifies an emerging policy approach that it calls a "life chances social vision" (Commission of the European Communities 2007). It proposes that governments should reduce their efforts to equalize economic *outcomes* across population groupings, since this is thought to add to the cost of production and thereby undermine competitiveness. The statement suggests that economic security which preserves the occupational status quo or obstructs adjustment, when the nation does not have the power to regulate international competition, may undermine that nation's competitive standing.

Instead, governments are advised to move towards ensuring greater equality of *life chances over the life course;* that is, of opportunity more broadly defined, and of access to the supports necessary for individuals to have successful work lives. According to that view, security would come from the individual's capacity, *properly supported by policy*, to adapt, to be on top of one's game, to be able to go through transitions without losing financial or social status. To the extent that the policy and institutional environment can achieve these ends for both employers and workers, economic output and well-being should both increase. This is to be done (and this is a challenge) without abandoning those who are unable to compete successfully and who may require assistance throughout their life course, as well as maintaining the broad social solidarity required for political stability and the achievement of societal aspirations.

The new vision might be read as a liberalizing trend but within a stronger policy framework than exists in liberal economy countries. It recognizes that in the new labour markets, the decisions and actions of individuals have and will become stronger factors in their own well-being, as well as, cumulatively, in national competitiveness. It is to everyone's benefit that they have the means to successfully plan and exercise choice, and thereby direct their life course, and yet not be jettisoned when times get rough. There is an increasing emphasis on career assistance and portable human capital, as well as an evolving need for high-quality services of information, advice, and consumer protection.

Policymakers acknowledge the need to ensure that individuals are not expected to compete on their own in situations where an individual is at an acute disadvantage relative to collective institutions.[1] Social insurance programmes and other forms of policy-directed collective insurance evolved and grew precisely where they provided a clear advantage. Nonetheless, there are new explorations of how to introduce flexibility and choice into collective instruments for economic security, as well as into ongoing work arrangements, in order to enhance adaptability.

2.3 Recent Policy Concepts

This policy discourse is not by any means restricted to Europe. The vision that was articulated seems to incorporate a number of developments which have emerged and have been discussed in many countries and regions. However, the specifics of the policy themes differ from country to country and from region to region, and they take on the hue and tenor of domestic political preferences. The following text presents some more specific developments and themes which are contributing to the discussions among policy wonks and politicians.

[1] An example of such a situation is the capacity of an organization managing the savings of a large pool of individuals to moderate or "smooth over" the cyclical effects of the markets on individual savings or on returns on annuities. An individual retiring with only a personal account may not be able to delay purchase of an annuity until the markets improve but is subject to the rate of return at that particular time. The same individual also has little bargaining power to influence the costs of professional funds management. These costs may be reduced by collective purchase.

2.3.1 A Life Course Policy Perspective

A long-term policy perspective is not new among social or private insurance planners. However, life course research highlights the effects over the life course of important life events or decisions, as well as the government interventions that respond to or influence them. Certain actions and experiences, such as high school dropout, marital dissolution, delayed childbearing, or extended education and mobility, have powerful effects on employment patterns or income over the life span. We discover, for example, that people with more education tend to work more hours over their lifetimes, in comparison to those who leave school early. This is the case even though they enter the labour force at a later age (Policy Research Initiative 2005a). We realize the impact that early childhood development has on the entire life course of the individual and how early childhood experience can help either to equalize life chances or contribute to lifetime disadvantage and inequality.

Many income security programmes are triggered by point-in-time status or measurements (e.g. annual or monthly income, unemployment, disability), without much consideration of the life course factors involved. Yet, a recent Swedish study suggests that in several countries, more than three-quarters of public income redistribution can be considered as being transferred across stages of life rather than across income groups. Thus, a rationale emerges, not for reducing support for those in need but for considering the life course economic security of an individual as an integrated package (see Fölster et al. 2003).

The Clinton administration in the USA was actually a harbinger of a life course approach to policy when it attempted in the early 1990s to implement "lifetime accounts". These lifetime limits on income assistance for individuals were applied to federal subsidies of state programmes. That administration succeeded in reducing the federal role in income assistance funding, while simultaneously increasing their Earned Income Tax Credit—thereby increasing employment incentives that stayed in place even when the recipients changed employers.

2.3.2 Transitional Labour Markets

Proponents of Transitional Labour Markets (TLM) point out that people in recent decades have more life course transitions in and around the labour market, compared to their counterparts in earlier generations (see, e.g. Schmid and Schömann 2004). They move back and forth among jobs, employers, self-employment, and caring responsibilities in the home. The TLM approach is for public policy not to reduce or oppose such changes but instead to make them more *efficient.* These changes are necessary in the efforts to acquire human capital, to take risks, and to balance work and life. They propose supports to enable the transitions, removing unneeded impediments to mobility (e.g. the frequent use of penalties in unemployment

insurance for voluntary quits), and putting more decision-making into the hands of the individual. Facilitating transitions makes the labour market more flexible and helps workers and families adapt and be more productive. TLM promoters argue that decoupling the relationship between employment with a particular employer and the associated benefits (such as dental, health, and disability insurance, or pensions) permits more efficient movement between jobs.[2] The TLM theme originated in Germany and reflects a heavy reliance on public and quasi-public labour market institutions. Nonetheless, it is also credited as the origin of the "flexicurity" concept discussed next.

2.3.3 Flexicurity

There is an assertion that European labour markets, except for Scandinavian countries, are too rigid and regulated to respond effectively to global competition. By contrast, the USA and Canada, as well as Australia and New Zealand in some instances, are considered to have labour markets that are more open and flexible. These labour markets provide lower levels of protection for workers and a minimum of regulatory constraints on employers. "Flexicurity" is a term chosen in Europe to express the objective that policies should encourage more flexibility (especially for employers in managing their workforce) while also retaining or enhancing the security of workers and their families. Flexibility for employers relates mainly to permitting freer choice in hiring and firing, determining remuneration levels, working hours and working arrangements, qualification requirements, etc. Retaining or enhancing worker security in the context of more flexibility is the challenge.

Denmark has become a kind of poster child for flexicurity. Danish policies provide little protection for workers regarding job security. Employers can hire and fire without many restrictions. However, Denmark provides very generous unemployment benefits, so that workers are not afraid of losing their job or moving to a different employer. Denmark also spends large sums on active labour market programmes to support retraining and mobility (e.g. about 5% of GDP compared to less than 1% in Canada). They discourage moral hazard by insisting that unemployed people are either in active job search or in training. Denmark ranks consistently among the top nations in competitiveness and attractiveness for investors.

More recently, there has been discussion of the benefits (both economic and social) of providing workers with more flexibility in the way they organize their work and family lives and their work arrangements. In some countries, flexicurity has led to the adoption of policies that permit workers to accumulate credits of money and/or time in order to have more options and be more self-directing in their career. This may involve taking time off to balance work-life conflicts, get

[2] Responsibility for the benefits could perhaps be transferred to the state or to another arm's-length collective institution.

more training, or make career changes. Since 1999, the Netherlands has been developing flexicurity arrangements under their Flexibility and Security Act. This act increases the security of part-time and non-traditional work ("flex workers") by ensuring that they have access to equal benefits and by limiting the number of sequential temporary contracts (three contracts or 3 years total). Access to unemployment and disability benefits has been decreased, while investment in training and placement services is increased. The Netherlands recently implemented a life course savings fund to explicitly permit workers to accumulate credits for a variety of life course choices, such as time off for work/life balance, training, or other life projects (see Tros 2009).

2.3.4 Asset-Focused Policies

The role of personal and family *assets* as a factor of success and security and as a policy objective has been gaining interest, especially in liberal economy countries.

One perspective is not new. Canada and the USA have consistently encouraged and subsidized private savings for retirement. While this individualizes some of the risk of economic security in retirement, it also gives workers some security while moving from job to job and some choice in planning their retirement.

Some other asset-focused themes are more recent and are linked to a life course perspective. Income assistance policies, for example, have traditionally responded to point-in-time income measures and often insist that a person or family exhaust much of their assets before being eligible for help. The life course effects of eliminating these assets were generally ignored even though the motivation and capacity of the individual to bounce back may have been undermined.

Recent innovations in the USA and UK, and to a limited extent in Canada, have aimed at helping disadvantaged people to accumulate assets as a means to help them plan ahead, feel more included in society, inspire and encourage their children, and weather the ups and downs of life. Asset-focused policy has been used to encourage savings for education, for employment support services, and for general purposes. Often, these programmes provide matching contributions whereby money deposited into a savings account by a low-income person or family is matched or multiplied by a state contribution. Various restrictions may be put in place regarding the allowable purposes for withdrawal. In the UK, initial and annual state endowments for children have been aimed at providing more equitable "launching resources" for young adults.

Home ownership is also an area where public policies have encouraged asset accumulation. President Bush advanced the notion of the USA as an "ownership society" (thus, the opening quote from Obama) where specific national goals for extending home ownership combine with more general goals for people to accumulate assets and to manage their own futures. The UK has endorsed the concept of a "stakeholder society", combining ownership and assets with other forms of

community and civic engagement in an attempt to build a more inclusive society. Of course, the recent collapse of housing markets in the USA, and subsequently of financial markets almost globally, shows how vulnerable the individual may be to market manipulation by powerful institutions. The fact that many people who lost their homes, jobs, and retirement savings had also to participate in the taxpayer-funded bailouts of the same institutions has probably had some effect on the public psyche.

2.3.5 Personal/Human Capital

A focus on assets opens a door to related concepts, some well developed, and some less so. Some employ the term "capital" to suggest a kind of asset that can be mobilized by the individual to pursue personal objectives. "Human capital" is the best known and most researched. It has been demonstrated repeatedly (although often measured narrowly by level of education) to bring economic returns both to the individual and the society. All countries are investing heavily in their education and training systems, recognizing the powerful impact it has on their competitiveness and living standards.

"Social capital" is a more recent term and not always consistently defined. The Policy Research Initiative (2005b) has tended to consider it a resource residing primarily in individuals and in their linkages to others—supportive networks, reciprocal obligations, etc. Other analysts (notably Putnam 1995, 2000) have looked at more collective dimensions and how social capital sustains communities and societies and supports social norms. A common example of the role of social capital in past decades has been the practice of new immigrants finding supportive relationships among more established immigrants from their country or cultural group and thereby being assisted to gain an economic foothold in their new country.

A variant of this concept might be termed "cultural capital", which refers to a person's ability to function in the language and culture predominant in the community or workplace. Immigrants of earlier generations may have been able to integrate economically based on trade skills, manual labour, and the social capital which they were able to access through communities of people of their own background. However, the new economy requires more language-based, people-oriented, and organizational knowledge.

The role of family affluence and education has also been identified in recent research as a vital factor in the success of children (see Corak 2006). Not only is the childhood experience a critical factor, but for youth in transition to adulthood, there are important launching and sustaining resources. During the years of high youth unemployment and the longer and diverse patterns of transition to career, massive, if unrecorded transfers of income (real or in kind through living at home with the parents) took place. If the European Community objective of "equalizing life chances" is to be rigorously pursued, it may be a growing challenge to public policy to offset the unequal advantages of family capital.

Finally, and so far a bit on the periphery, the concept of health capital has been explored (Williamson 2006). This refers to the important role of personal health in the social and economic success of the individual and the economy. As an example, Statistics Canada research reports that some 26% of recent retirees would have remained in the labour force if their health were better (Schellenberg and Silver 2004). In times of high labour demand, if those people had the health to work another year, it would contribute substantially to the economy. In recent decades, most countries have witnessed a "compression of morbidity" which suggests that people stay healthier longer in life. This factor may be present in recent increases of labour force participation among older workers (as well as economic necessity among those whose personal savings are inadequate). With increasing pressures on governments to control health-related expenditures, some kind of rationing seems inevitable, and is proceeding in some form in most countries. As the costs inexorably increase, the relative benefits of prevention (e.g. of industrial accidents or lifestyle diseases which take people prematurely out of the labour force) also increase and we are likely to see more developments in that area.

2.4 What Is the Significance of These Developments to the Preparedness of Individuals for Retirement?

It appears that in most Western nations, policies that support personal capital, personal choice, and individual initiative are becoming more important. This is the case whether the nations are more collective or more individualistic in their political orientation. Moreover, life course research is showing us that the range of areas in which individual choices have an important long-term economic impact is quite vast. An endless variety of outcomes arises from decisions regarding educational trajectory, family formation and dissolution, career choice and career change, leave for various purposes, lifestyle and health, as well as choices in personal consumption, ownership, investment, and retirement savings. These factors combine with economic processes, market developments and disruptions, and luck to produce that variety of outcomes. Thus, one may question whether the state can help people with widely different levels of competence, assets, and interests to be successful, and indeed, how competent is the state to do this. If people have flexibility of choice without the assets, preparation, knowledge, support systems, and opportunity required for success, the cracks in the system will become evident, and they will show up in exclusion and increased social and economic inequality. Part of the *raison d'être* of social insurance programmes and institutions was, in essence, to narrow the range of possible outcomes, so that individual decisions mattered less. The new direction poses major challenges for individuals who are not in control of many of the factors affecting their lives and for governments that have been accustomed to dealing with reality through narrow programme expenditure budgets (for related discussion, see Hacker et al. 2010).

In the past, international research organizations like the OECD have tended to monitor primarily the public spending and public services provided by their member states to support labour market success. However, in recent years, they have begun to consider a larger picture as the appropriate focus of public policy and accountability. This picture comprises the complex system of public, institutional, and private resources and activity (Adema and Ladaique 2005). Ensuring that all these dimensions work well together, and that people who are delegated more choice as well as responsibility are actually able to do that and produce desirable social and economic outcomes (including the objective noted earlier "to equalize life chances over the life course"), is a task which will challenge institutional coherence and the competence of governments.

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Chapter 3
Overview of the Dimensions of Preparedness for Retirement

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This chapter presents a review of basic concepts pertaining to an assessment of preparedness to meet retirement's challenges. The review forms part of the conceptual foundation for the design of two composite indicators used in the book's core chapters. It focuses on the idea that a person should plan retirement as a transition between two sets of activity that keep her embedded in supportive social relationships. Adopting a broad view of retirement that involves gradual disengagement from a lifetime of active production of paid and unpaid work outputs, this chapter endorses the rule that persons should plan to *retire to something, not from something*. It emphasizes the importance of recognizing distinct waves of retirement within ageing cohorts, showing the estimated wave patterns in Canada and the USA. Regarding financial preparedness, the text stresses the importance of taking small preparatory steps over a long period of time. People should start early, where feasible, under the rule that in financial preparations *time is your friend*.

3.1 Introduction

This chapter presents a brief review of important dimensions of preparedness to meet retirement's challenges.[1] The review forms part of the conceptual foundation for the design of two composite indicators used in later chapters.

[1] While doing so, we support the view that it is important to regard retirement as part of a network of later-life transitions, and that attention to other aspects of this network is needed (Denton et al. 1997).

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Before moving forward, it is important to comment on the meaning of the word "retirement". There are two distinct approaches to the definition of "retirement". One of them orients thinking entirely towards the labour market and jobs that have been held by the person in question. The other is a broader concept which recognizes that individuals can have lifetime commitments to making important outputs of productive work that are valuable to their families and to society, even if they are not paid. At some point in life, they will stop doing that type of work and thus, in a sense, they have retired even if the context is not paid work.

Let us look at these two points of view.

Adopting the viewpoint that retirement deals with a process which pertains to departure from the labour market, we accept the approach which acknowledges that in many people's lives, there are at least two phases of retirement. Phase I comprises a departure from a career job or a lifetime pattern of participation in the labour market. Phase II is the final withdrawal from the labour force.

For many people, this departure is not the final retirement. They may leave the labour market for a while; but they will return for varying amounts of time and intensity of participation, and while they have returned, it is often said that they are occupying "bridge jobs". Only when the period of occupying bridge jobs ends do we speak of the final withdrawal from the labour force, which has been called "phase II retirement".

The discussion that follows pertains primarily to the approach to retirement as if it is a process of disengagement from the paid labour market. However, aspects of the text in other chapters include not only departure from the paid labour market but also disengagement from a lifetime of active production of unpaid work. There are many people who devote substantial segments of their entire adult lifetimes to the provision of unpaid productive work that is important to their families and to society. It is reasonable to acknowledge that at some point, as advanced age approaches, individuals who have devoted their lives to doing productive unpaid work stop or reduce it to a level which is so small that the outputs are merely token outputs. In that situation, they may be said to have retired (for related discussions, see Denton et al. 1997; McDonald 2007; Stone 2007).

The approach which envisages a process of departing from unpaid productive work is relevant to two aspects of the texts that follow. This fact is important in parts of the world where a large proportion of total labour output is in the form of unpaid work. Even in societies where the paid labour market is dominant, major population segments may provide their labour outputs primarily in the form of unpaid work.

The first aspect of this book for which one needs the broader approach to the term "retirement" is that of risk management. As we saw in Chap. 1, several risks that are important concerns to a person in the Third Age are independent of whether the person had a history in the paid labour market.

The broader concept of retirement also applies where the text below focuses upon gender differentials. It is well known that across the world, women's working lives most often incorporate a major dedication to unpaid productive work that is valuable for their families and for society. This remains true even when they participate

actively in the paid labour market. Later chapters contain discussions that deal with distinctive aspects of risk management challenges faced by women and their retirement preparedness.

3.2 A Multifaceted Retirement Process

In the early literature, it was often assumed that the retirement process was one in which workers left their career employment and departed from the labour force in one step. This idea has given way to the concept of a multifaceted process of transition (for related theoretical discussion, see Stone et al. 2006). Different mixes of risk are associated with different pathways followed in the transition to retirement. It is also the case that the pursuit of a particular pathway may be undertaken as part of one's risk management strategy. We develop this idea in two ways in this section. First, we consider those who return to the labour market after initially leaving it in order to retire (the so-called un-retirees). Second, we consider the timing of passage from the labour force. Data for an ageing cohort will show a distinct pattern of waves in the probability of making that passage in the coming year.

The rates of return to the labour market after phase I retirement have been the subject of several recent studies. Léonard and Rainville (2008) drew a 10% sample of Statistics Canada's Longitudinal Administrative Database from 1992 to 2002. From this sample, they drew persons aged 50–64 who had positive employment income in 1992 and 1993. They defined retirement as having 1 year of no employment income in any year between 1993 and 2000, and a return to work was any positive employment income after the year of no income in the years 1995–2002. They found that 18% of those who retired returned to work for some time.

In the 2005 General Social Survey, retired respondents were asked whether they had done remunerated work after their first retirement. Schellenberg et al. (2005) found that slightly more than 20% had returned to work and a further 4% were looking for work but unable to find it.

The percentage doing part-time work was unusually high among those who returned to the labour market for some time. In an unpublished analysis, we pooled data for three panels of the Statistics Canada Survey of Labour and Income Dynamics. Each panel was followed for 6 years. Among pre-retirees who left the labour market and were collecting some form of retirement-related income, roughly 20% returned to the labour market during the observation period. Whereas 10% of all employees aged 45–69 held part-time jobs, over 50% of the "un-retirees" held such jobs, as Fig. 3.1 illustrates. The "un-retirees" had left the labour market and then came back.

Although the reasons for returning to part-time work are varied, they include an important psychological factor. Retirement planning consultants who provide pre-retirement consultations to employees of various companies consistently hear people pose the following question: "What am I going to do? I have been in this line of work for many years; it's all I know how to do. I don't have alternatives".

Fig. 3.1 *Bar chart* showing the percentage employed part time among retirees who returned to the labour market, ages 45–69, by sex, in Canada (Source: Statistics Canada, Survey of Labour and Income Dynamics)

This common expression of concern has prompted the rule that people should plan to *retire to something, not from something*. This rule points to a process of creating a structure of activities and relationships into which persons might retire. For many people, structure in retirement includes doing part-time work.

The general concept that we wish to emphasize here is that a process of pursuing meaningful social engagement, which often includes holding a part-time job, is an important dimension of retirement-related risk management.

Another key element in the creation of risk management strategy is the timing of the transition to retirement within the context of a person's evolving life course. If we follow an ageing cohort, we would see that there is a collection of specific ages at which the probability of making the transition rises sharply. Contrary to media reports, this rise is not focused on one particular age, such as the mean age of retirement. This point is supported by the patterns shown in Fig. 3.2 for Canada and the USA.

Figure 3.2 shows the age profile of the probability of making a transition into retirement over the coming year, where the transition is identified in terms of departure from the labour market. The data are based upon three adjacent cohorts[2] defined in terms of year of birth, and these three cohorts are parents of a subset of baby boomers.

The probabilities shown in the vertical axis are approximate estimates of the true values, but what is important here is the shape of the curve, not the specific numbers at each point. It seems quite likely that the shape of the curves of the true probabilities over the range of ages from 47 to 71 is very similar to those shown in these two figures.

[2]The term "cohort" used here means that we have followed a population born in a certain 3-year period from the time they were aged 47 to the time they were aged 72.

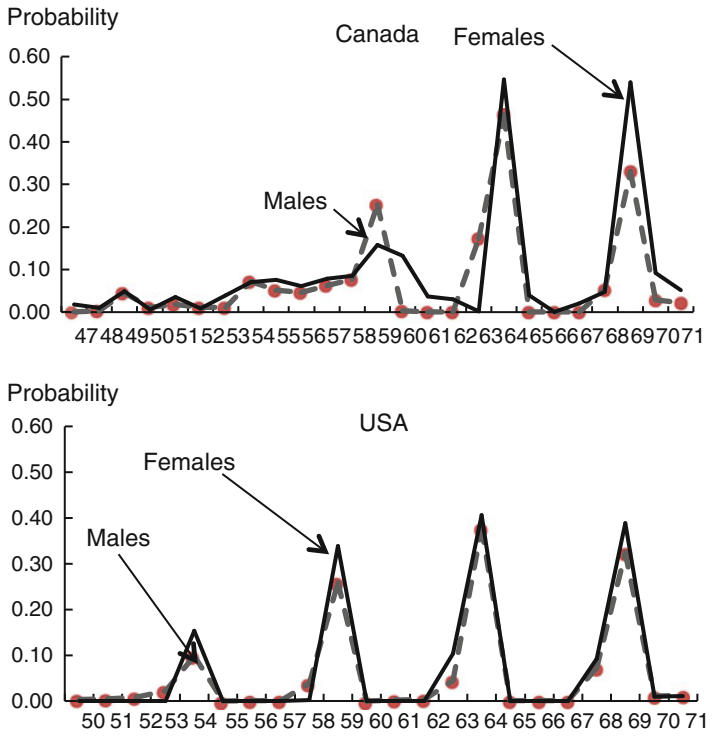

Fig. 3.2 *Line chart* of the age profile of the probability of retiring in the next year for *female* and *male* cohorts aged 65 between 2004 and 2006 in Canada and the USA (Source: Estimates based on a formula developed by Leroy Stone, with data inputs from Statistics Canada, US Census Bureau, Bureau of Labor Statistics and National Office of Vital Statistics. The data are from censuses, current population estimates, Labour Force Surveys, and life tables)

From the time the cohorts were mature adults aged in their 40s to the time when they were mostly retired in their early 70s, there were four distinct waves of the probability of making the transition into retirement. They are found at the following pairs of ages: 54–55, 59–60, 64–65, and 69–70. The pattern is similar in Canada and the USA, but the first wave seems to be much higher in the USA.[3]

Returning to the earlier discussion about persons returning to the labour market after first leaving it to retire, it is worth noting that these "un-retirees" may be important contributors to the heights of the curves at ages 64–65 and 69–70. The data used to develop these estimates do not allow one to isolate those who were leaving the labour force permanently. It is most likely, however, that the "un-retirees" are heavily concentrated in the first two waves.

[3]It is important to keep in mind that as each wave passes, the pool of persons available to be affected in the next wave is reduced in size, and the charts confirm that the reduction by the wave for the ages 64–65 is dramatic.

In both countries, the final two waves are higher for women than for men. In the USA, the probabilities are higher for women than for men at every wave. This is consistent with a body of research showing that women tend to retire earlier, often due to family-caring responsibilities (see, e.g. McDonald 2006; Deschênes and Stone 2006).

Finally, the reader may wish to know whether baby boomer cohorts are following similar tracks of retirement probability waves as those shown in Fig. 3.2. The curves for baby boomer cohorts are far from complete because the oldest boomers were aged 63 in 2009, the last year for which we have probability estimates. Up to that age, the profile of the curve that we have estimated for the oldest boomers is similar to what Fig. 3.2 shows (data available from the authors).

In short, within an ageing cohort, there will be a set of distinct waves of transition to retirement located at different ages. These ages are structured by cultural forces as well as a mix of private and public policies pertaining to access to retirement-related benefits. It has long been known that whether one retires early or delays retirement for several years is a factor in the mix of issues to be faced in retirement. What we emphasize here are data suggesting that there is a pattern of *waves of transition to retirement* concentrated around four particular ages, and the ages are the same for Canada as for the USA. We would argue that a planning focus upon these waves (by the relevant deliverers of retirement related services) is more useful than one focusing on one single age such as the arithmetic mean age of retirement.

3.3 Civic Engagement

We have already emphasized the importance of social-psychological aspects of retirement-related risk management and retirement preparedness. Of central importance is the substitution of workplace-based social networks with such networks anchored elsewhere. This substitution is achieved through a process of pursuing meaningful social engagement that helps an individual to protect the self-esteem that was built around abandoned workplace relationships.

Many venues for this pursuit involve aspects of civic engagement. The retirement planning module of the 2007 General Social Survey of Statistics Canada seems to be one of the relatively few opportunities provided by survey data to examine this dimension of retirement preparedness. This data source is used below.

A key function of civic engagement as part of preparing for retirement is that of creating *an identity outside the workplace*. Civic engagement creates avenues for providing useful work outputs that bring a sense of positive self-esteem and the feeling of continuing to make important contributions to the lives of others.

This is crucial because so much of one's self-identity is based upon relationships in the workplace. There will be threats to this self-identity upon departure from the career job, unless there has been careful planning of identity change involving

relationships outside the workplace (for related discussion, see Nininger 2003; Cooper 2008; Jones 1999; Turcotte and Schellenberg 2007).

3.4 Risk Management

Risk management is another major area of preparedness for retirement, although some of its aspects require the development of sophisticated knowledge. Much commentary about dimensions of risk management is avoided here because the topic has been covered in Chap. 1 (see also Mitchell 2010). The text below adds a few remarks about certain non-financial dimensions of risk.

Health-related misfortunes are prominent among those that are discussed regarding the use of insurance for risk management in later life. In countries with strong government-supported health insurance schemes, there may be a tendency to think that they cover all health-related risks. This is not the case. Other private types of insurance including long-term care insurance, critical illness insurance, and prescription drug insurance are often recommended by experts.

All three kinds of insurance just cited address a basic problem. Income that is enough to maintain one's customary and desired lifestyle may be woefully inadequate should a health-related misfortune occur in retirement. These insurance types are available to preserve family wealth and lifestyle when active earning power has stopped. The requirement for these products is best addressed well before a planned retirement date, because as age advances, it becomes more difficult to qualify for them (for related discussion, see Health Canada 1997; Sun Life Financial 2008).

Another key target of retirement-related risk management is longevity risk. Simply put, longevity risk is the risk of encountering special misfortunes associated with reaching advanced age. At least three of these misfortunes are important. The first is that of out-living one's private savings, the second is that of out-living almost all the significant others in one's life, and the third is a possible major loss of functional capacity. Out-living the significant others in one's life has two important dimensions. The first involves diminished access to informal caring services. The second is the loss of persons with whom to share feelings, which contributes to the onset or the intensification of depression.

An often overlooked aspect of longevity risk is the caring responsibility that may fall upon the shoulders of family members and other loved ones. When these persons are approaching retirement, risk assessment relative to possible arrival of caring responsibilities forms part of their own preparedness. This is especially important in countries where the development of formal long-term care support services is at a low level, or the costs of these services are such that only the well-to-do find them affordable. Even in countries such as Canada and the USA, where access to these services is available, with government subsidization, to middle- or lower-income persons, family caregivers, neighbours, and friends are responsible for a high proportion of the care delivered to seniors with long-term disabilities or physical limitations (Pyper 2006).

3.5 Financial Preparedness

Aspects of financial preparedness have already been cited above. However, several topics under this general heading deserve attention.

3.5.1 How Soon Should Preparations Begin?

One of the central questions concerning preparedness for retirement is how soon the financial preparations should begin. While everyone understands how expenditure demands unrelated to retirement are inevitable preoccupations of young families, it remains true that "time is your friend" in building up financial capital from which some portion of retirement income might be derived. The earlier we start saving, the smaller is the amount that we need to set aside annually so as to have the requisite pool of capital in retirement. For this very important reason, questions about preparedness for retirement should not be limited to those who are on the brink of retirement.

What is the requisite pool of capital? For most people, it seems to be the capital required to allow them to maintain their desired lifestyle. In our work as retirement counsellors for a period of more than two decades, we often find that either people have not calculated the required size of the pool or they have little idea concerning how to go about doing it. Yet, everyone needs to know how much must be invested in a capital fund if it is to deliver month after month, over a period that could be as long as two decades. This capital fund would provide the amount of money needed to satisfy the basic necessities of life. Thus, questions about preparedness for retirement should include probing to find out whether people are aware of this issue and what they have done about it.

3.5.2 Financial Literacy

One reason many people fail to plan adequately for retirement is that they are financially unsophisticated or illiterate. Financial literacy deserves attention as a key dimension of preparedness for retirement, and it has a variety of aspects. They include making simple calculations regarding interest rates and their impacts on capital resources over different time periods, knowing the difference between nominal and real interest rates, and having some rudimentary information concerning the principles that underlie sound management of investments.

We have already pointed to one of the basic pieces of information that should come from adequate financial literacy—knowing what size of capital pool is needed to deliver *N* dollars of investment income and cash flow for a lifetime. Sophisticated thinking about this topic would take into account taxes, price inflation, investment management fees, and interest rates. As already noted in Chap. 1, this is a topic that requires special education (for further information, see Cooper 2008).

3.5.3 Income Sources and Their Integration

Going along with basic financial literacy is sound knowledge about income support sources: including the workplace pension plan, if one exists, and government income supports. As is well known, individuals in particular situations will have different levels of access to resources, and these levels depend on laws that deal with the integration of income sources. Such integration exists when amounts received from one source will affect the amounts available from another source. If the person has a spouse who also has access to some retirement income sources, that may also influence her or his access to a certain level of income from a particular source.

3.5.4 Quality of Financial Advice

In short, a complex variety of issues may arise in trying to address financial preparedness adequately. Since a fraction of the adult population may have the requisite education and information to independently tackle this variety of issues, the question of access to professional advice and the quality of the advice become important dimensions of preparedness for retirement.

One of the major types of assistance that qualified financial advice provides is that of assessing one's basic resource adequacy. Because oceans of ink have already been spilled about this topic, it suffices to say here that included are various dimensions of wealth such as government-assisted retirement savings programmes, other private savings, owned property, pension wealth, and debts. Probing of these dimensions is also important in developing a statistical indicator of preparedness for retirement. (The *National Retirement Risk Index* of the Center for Retirement Research at Boston College is a major effort that involves measuring and forecasting households' access to wealth holdings and entitlements that will deliver them incomes in retirement. See Munnell et al. 2006. Results from a more recent effort in Canada have been published by MacDonald et al. 2011).

3.5.5 Efficacy of Financial Planning Activity

Whether one explicitly engages in planning activity is also an important aspect of measuring preparedness for retirement. Researchers in the USA have found a strong statistical association between the conduct of retirement planning and the level of wealth achieved among those making the transition into retirement (Lusardi and Mitchell 2006). They were able to test whether this association existed because higher-than-average wealth was causing people to plan more actively. Their data indicated that it was more likely that planning was a causal factor in the creation of retirement wealth (Lusardi and Mitchell 2006). Thus, planning is an effective

force by itself, independent of one's wealth, and carrying it out promotes wealth accumulation. This theme is echoed strongly in HSBC's sixth global report about the future of retirement (HSBC 2011). Based on a survey of 17,000 respondents in 17 countries, the report expresses one of its central findings as follows:

> What emerges strongly from the findings are the very real benefits of financial planning: respondents who have a financial plan in place enjoy a clear "planning premium" with hard financial benefits. … [T]hey also amass a significantly higher value of assets; on average "planners" have amassed nearly two-and-a-half times (245%) more in their retirement plans compared to "non-planners", and over three times more (319%) in non-retirement assets.[4]

3.5.6 Debt Management

Another important aspect of preparedness is debt management. For example, retirement planners often advise that their clients attempt to have no consumer debt as they enter retirement. Similarly, paying off a mortgage (if it exists) and taking steps to make homes as maintenance free as possible before retirement are often recommended strategies in anticipation of the reduction of cash flow after retirement.

The preceding discussion has been a review of multiple dimensions of preparedness to address retirement's challenges. This will help to set the stage for the design of a survey-based statistical indicator of preparedness, which is addressed in Chap. 7.

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[4]Reproduced with permission from *The Future of Retirement: The Power of Planning*, published in 2011 by HSBC Insurance Holdings Limited, London.

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Chapter 4
The Fall in Confidence Among the Pre-retired

Leroy O. Stone and Gerard Rainville

This chapter focuses on the behavioural response of delaying retirement because of the economic shocks that came with and followed the 2007–2009 financial crisis. Postcrisis surveys found that between 20% and 40% of older jobholders in various countries have decided to delay retirement. This pattern persists in surveys conducted during 2010–2011 in Canada and the USA. The results of surveys suggested that across a wide range of workers, there was a substantial fall in confidence about their standard of living during retirement. A key factor in the fall of confidence has been the damage done in the labour market to employees' earning power, and this was more influential than personal wealth losses in financial markets. We suggest the hypothesis that the sustained fall in employee confidence will tend to produce a heightened awareness of retirement-related risks. We predict that a growing proportion of the affected populations will develop a greater awareness of the importance of attending to the effectiveness of risk management relevant to losses that might occur in later life, and, particularly so, among those who have little or no time in their lives to recover from their losses.

4.1 Introduction

Hopes have faded that the recovery of financial market prices from their lows of 2008, with the consequent restoration of pension funds' asset-to-liability ratios and retirement savings valuations, would bring pre-retirees back to a sentiment of

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The views expressed in this chapter are those of the authors and not necessarily of AARP.

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returning "back to normal business" in planning for their future lives. In hindsight, it appears that these hopes were like buildings mistakenly built on a foundation of loose sand. The purveyors of these hopes tended to pay too little attention to the prolonged disaster in housing prices and lowered levels of opportunities for employment and business. By focusing so heavily on developments within the financial markets, many analysts forgot the fact that the protection of personal earning power is of far deeper significance to workers than is retirement savings valuation (for an important related discussion, see Milevsky 2010). The damage to personal earning power persists as we approach the end of the third year after the depths of the financial crisis (during the fall of 2008). No wonder surveys of older workers continue to show substantial proportions having delayed or planning to delay their retirements.

In the extensive reporting on the effects of the financial crisis and its aftermath on older workers and their families, three kinds of behavioural responses were featured. These were delays of retirement, changes in spending patterns, and changes in saving behaviour. Generally, among these three impacts, delays of retirement seem to be the most consequential both for the families involved and for the affected institutions, including government social and economic policy agencies. The text that follows will focus on the response of delaying retirement.

In approaching the analysis of recent patterns in retirement delays, the existing literature has tended to focus upon two ideas. First, workers were simply making a rational response to their wealth losses—extending their working lives to use earnings to recoup those losses. The second idea is that pre-retirees experienced a reduction of confidence in the adequacy of what they had accumulated for their retirement (including all kinds of relevant rights, owned capital assets, and retirement savings). Thus, delaying was a strategy to improve their security in later life.[1] The theme of working longer to improve security and quality of life during years of retirement was already in wide use before the financial crisis, as experts tried to explain a distinct upturn in the labour force participation rates among the older population since the early 1990s (Blau and Goodstein 2009). The aftermath of the crisis in the real economy served to highlight this theme among pre-retirees.

Our analysis of data from relevant surveys in Canada and the USA suggests that a rise in fear was associated with this reduction in confidence. This in turn triggered what we are calling "risk-anxiety". The term "risk-anxiety" refers to a result of a convergence of three psychological processes:

- There is a heightened awareness of exposure to at least one of a set of linked losses (or misfortunes).
- The increased awareness raises fear about what would happen if one of the possible losses or misfortunes is actually encountered.
- The person has a substantial degree of doubt about her or his ability to tolerate or cope with the consequences of the encountered loss.

[1] These reasons overlapped one another for many persons.

All three elements come together to comprise risk-anxiety. This chapter emphasizes the third element—the doubt that one has about one's ability to tolerate or cope with the consequences of the loss if it is encountered. This doubt triggers the state of being anxious about the potential loss.[2]

Theoretical and statistical supports for a focus upon aspects of risk-anxiety are presented below. However, before turning to this presentation, it is useful to offer as a context-setting discussion a review of major results of surveys conducted in several countries. These surveys deal with workers' decisions to delay retirement because of the effects of the financial crisis and its aftermath upon their lives.

4.2 Rates of Delay of Retirement Found in Surveys Conducted Across a Number of OECD Countries

Across selected countries, surveys in late 2008–2009 found that one of the responses of jobholders to the perceived effects of the financial crisis has been to change their retirement plans. Australia (Ferguson 2009; Mercer 2009; Thomson 2009), Canada (Ipsos Reid/RBC 2009; Sun Life Retirement Research 2009), Ireland (Brennan 2010; Brady 2010), the UK (AON 2009), and the USA (AARP 2009; Clark and Mitchell 2009; Helman et al. 2010; Ishmael 2009; Rainville 2009; Rampell and Saltmarsh 2009; Sass et al. 2010; Sun Life 2009) are among the countries in which these surveys were conducted. More recent surveys continue to show that substantial proportions of pre-retirees have already delayed or plan to delay their retirements (see, e.g., Sun Life Financial 2011; Helman et al. 2011; Transamerica Center for Retirement Studies 2011; Grant 2011). These surveys have used a wide variety of questions and methodologies limiting the ability to do rigorous between- and within-nation comparisons. However, there are some broad similarities in the orders of magnitude shown among the reported rates of delays of retirement.

Surveys conducted between late 2008 and early 2009 found that between 20% and 40% of pre-retirees in various countries had decided to delay retirement. In Great Britain and the USA, surveys conducted much later in 2009 suggested an intensification of older-worker concerns because the rates of reported delays of retirement rose to levels above 50%. However, the more recent 2010 surveys suggest that rates of delay among the pre-retired were between 20% and 25% in the spring of 2011. Helman et al. (2011) report (from the 2011 EBRI Retirement Confidence Survey, held in early 2011) that 20% of workers are expected to retire later than planned. This figure rises to 22% among those aged 45 and over.[3]

[2] "Anxiety" seems to have different definitions in psychology. The definition we adopt treats anxiety as a state of being which is the result of other psychological states or processes, among them fear. For related details, see Collins FREE Dictionary (2010) and Barlow (2000).

[3] This estimate is computed from the same data source. The authors are grateful to EBRI, Matthew Greenwald and Associates, and other cosponsors of this survey for access to its microdata file.

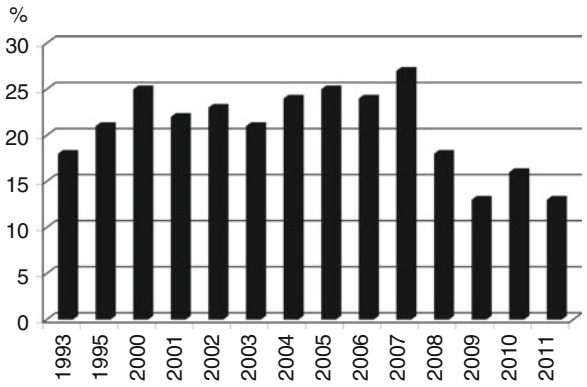

Fig. 4.1 *Bar chart* showing the percentages of workers who were very confident in their ability to maintain their desired standard of living in retirement from 1993 to 2010 in the USA (Source: Helman et al. 2011)

This is an important source for our purposes because of the long series of EBRI Retirement Confidence Surveys that have used broadly similar methodologies. Figure 33 in Helman et al. (2011) shows the percentage of all employees reporting that they expect to delay their retirement, for the years 2002–2011. The percentage that had this expectation vaulted from the mid-teens during the precrisis years up to the mid-20s from 2009 to 2010. The level estimated for 2011 remains above that for the precrisis period. In sum, approaching three full years after the depths of the financial crisis, close to one-quarter of pre-retirees were still reporting plans to delay their retirements.

Much of the media and academic explanation of the patterns in delays of retirement just cited referred to workers' attempts to recoup wealth losses sustained in pension or retirement savings programmes (see, e.g., AON 2009; Ferguson 2009; Rampell and Saltmarsh 2009; Thomson 2009; Weller 2008, 2009). However, a major finding based upon the two Sun Life surveys in the USA (Sun Life 2009) and on the long series of retirement confidence surveys conducted by Employee Benefits Research Institute and Matthew Greenwald & Associates (see Helman et al. 2010) points in another direction. Across a range of workers, including those without large wealth holdings, there was a substantial decline in confidence concerning their ability to maintain their desired standard of living during their years in retirement (see also AARP Public Policy Institute 2009). Figure 4.1, based on the EBRI Retirement Confidence Surveys, shows a sharp fall in retirement confidence between 2007 and 2008. Worker confidence in their ability to maintain their desired standard of living in retirement had been on an upward trend since 2001. The percentage of workers who said they were very confident rose from 21% in 2001 to 27% in 2007. However, a 9%-point drop was observed between the 2007 and 2008 EBRI surveys. In 2011, the retirement confidence measure was still at its lowest level in all the preceding 16 years, having fallen back to the 2009 lows (see Fig. 4.1).

There were notable variations in the reduction in confidence among age and socio-economic groups. Helman et al. (2011) provide a striking variation on this theme. The 2010–2011 fall in confidence level that they report is concentrated among those at the lower levels of savings. They also plotted confidence levels

Table 4.1 Percentage of workers who were very confident in their ability to maintain their desired standard of living in retirement, by age, in 2007 and 2010 in the USA

	2007(%)	2010(%)
Age group		
25–44	30.1	18.9
45–54	21.1	12.0
55–64	29.6	9.5
Well positioned[a]		
Level 1	5.3	6.9
Level 2	27.0	14.4
Level 3	35.2	28.0
Total	27.8	15.6

Source: EBRI Retirement Confidence Surveys

[a]Level 1 = (non-white race, self-reported health less than good, household income is below the median, employer is not known to offer postretirement health insurance)

Level 3 = (white race, self-reported health fair or good, household income is at the median or higher, employer does offer postretirement health insurance)

Level 2 = intermediate between Levels 1 and 3

against values of their indicator of retirement preparedness and found that the decline in confidence level was especially marked among persons whose level of preparedness was less than the average. The key explanatory hypothesis here is that in this population segment, there has been a sudden awakening to the true magnitude and complexity of their challenge regarding retirement risk management. Pursuant to seeing reality more clearly, their level of confidence about the future fell sharply.

There is also a notable age pattern in the fall of confidence, according to our findings from an analysis of data from the 2007 and 2010 EBRI surveys. Table 4.1 gives the 2007 and 2010 percentages of workers reporting that they were very confident about being able to maintain their desired standard of living in retirement. Over all ages from 25 to 64, the percentage of those saying they were very confident that they have saved (or will save) enough to retire comfortably fell from 28% to 16%. Among those aged 55–64, the fall was much greater—from 30% to 10%. Thus, persons in the main ages for transition to retirement moved from having higher than average confidence in 2007 to having much below average confidence in 2010.

Table 4.1 also shows that the pattern of confidence loss was not strongly correlated with losses of financial wealth. The fall in the percentage that reported great confidence is notable in the subgroup classified as being "well positioned" (see the line for Level 3). However, it is notably larger among the lower levels when they are combined.[4] These two population segments (the book's first illustration of *multidimensional key demographics*) are defined in the notes to Table 4.1.

[4]This result is obtained after adding the totals for Levels 1 and 2 and then recomputing the percentages for 2007 and 2010.

Undoubtedly, many persons deeply felt the losses sustained by their financial and pension wealth (including those in DB plans whose employers faced bankruptcy or major escalation of unfunded pension liabilities). However, it is arguable that another important story was unfolding among a population much larger than those who had substantial financial wealth holdings. In order to get into this story, one needs to turn to housing prices and the labour market.

Everyone heard about what happened to housing prices from the beginning of the crisis, but few writers linked those developments to confidence about life in retirement. Just one point should be noted here, to add to all the ink that has been spilled on this topic. Labour mobility experts have reported in radio interviews an important link between housing and labour market pressure. Many who would like to move to a job in another location cannot do so because they cannot find a buyer for their home.

The sustained deterioration of labour demand among the older population initially received scant attention (a notable exception being Johnson et al. 2008, who warned about this possible development late in 2008). In view of what has happened in home sales, housing prices, and labour demand by the spring of 2011, one should not be surprised to find that the EBRI 2011 Retirement Confidence Survey shows levels below most seen since the 1990s. AARP Public Policy Institute (2009) provides additional useful information concerning the labour market environment for older workers in the USA a few months after the darkest hours of the financial crisis.[5] These surveys from the USA suggest that from 2008 to late 2009, there was an intensification of the propensity to delay retirement among US pre-retirees (for related discussion, see Society of Actuaries 2010).

The fall in confidence among older workers seems to have been greater in the USA than in Canada. This is a hypothesis, and it needs to be tested using more adequate data than are currently available. Indirect and rough indications of support for this hypothesis are found when one looks at the unemployment rates among older workers of the two countries, as Fig. 4.2 shows.

This chart shows that the unemployment rate in the 50–54 age group, especially that for men, peaked in Canada in the spring of 2009. A generally downward longer-term trend marked by large short-term waves followed the peak. The most pronounced shorter-term upwards wave happened in the first half of 2010, and it was especially strong among Canadian women.

Both countries shared the peak levels of the spring of 2009, but the general downtrend just cited is not evident in the curves for the older American men and women. Among the older men, the peak in spring 2009 was surpassed near the middle of 2010. However, the rate has dropped back since then. Among their female counterparts, the trend of the curve has a slightly upwards slope from mid-2009 to the first quarter of 2011.[6] For older American men and women separately,

[5] In focusing on the labour market environment for older workers, it is important to acknowledge that the situation was considerably worse among the very much younger population at the entry level of the labour force.

[6] In Fig. 4.2, the age group 50–54 is treated as a proxy for older workers. We avoid higher ages here because at those ages, the denominator of the rate is being disturbed by departures from the labour force to a much more substantial degree than is the case at 50–54.

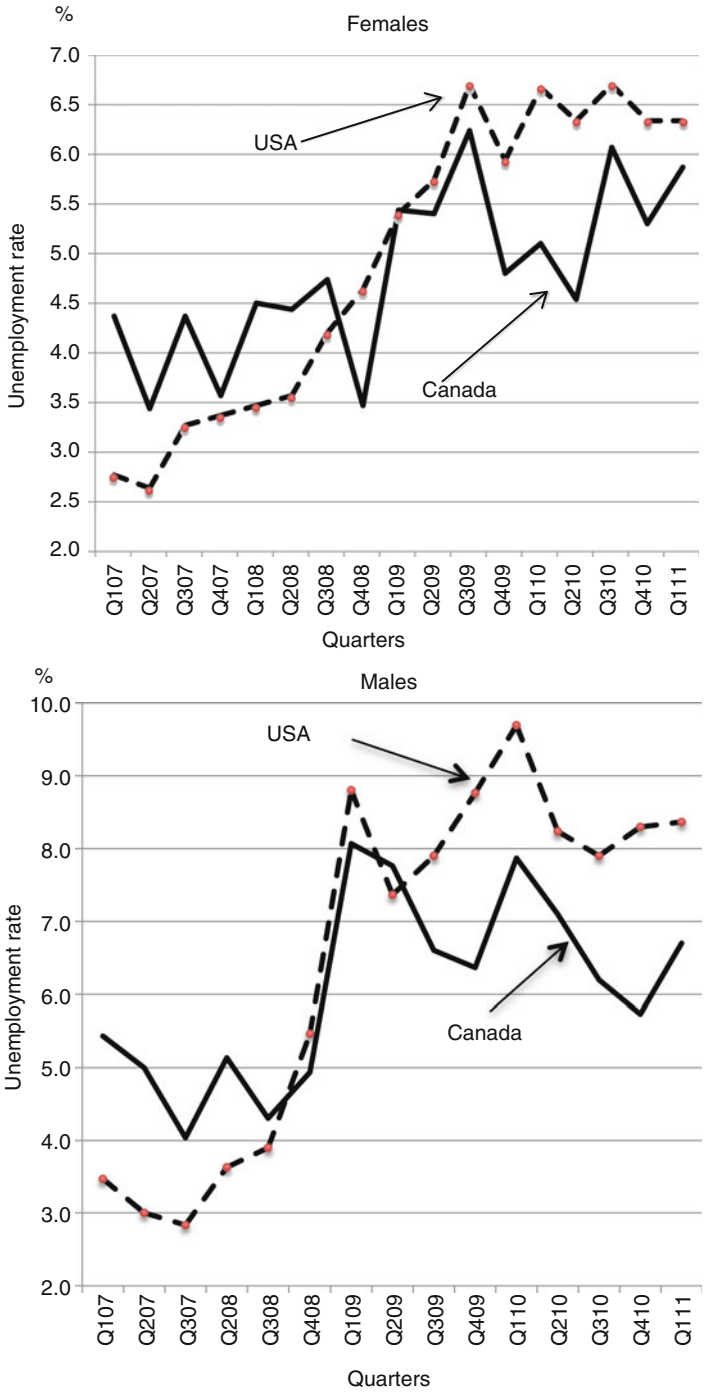

Fig. 4.2 *Line graph* showing quarterly average unemployment rates for the age group 50–54, by sex, from 2007 to 2011 in Canada and the USA (averages of monthly unadjusted rates) (Source: Bureau of Labor Statistics, Current Population Survey, and Statistics Canada, Labor Force Survey)

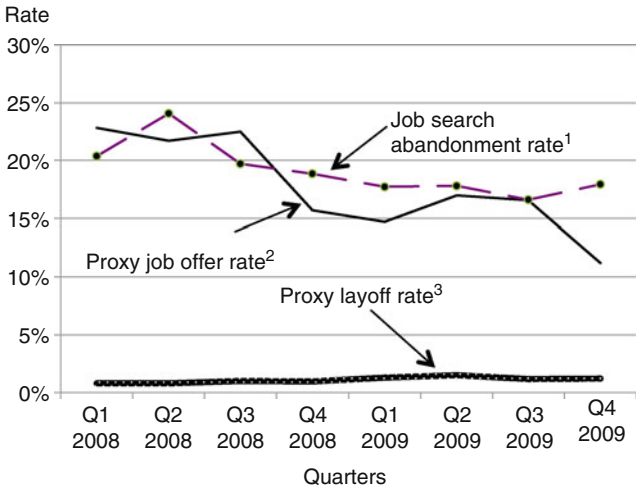

Fig. 4.3 *Line graph* showing rates of flow among selected labour force categories for the age group 55–59 from the first quarter of 2008 to the fourth quarter of 2009 in the USA (Quarterly averages of monthly flows). *1* Percentage who moved from Unemployed in month N-1 to Not in the labor force in month N. *2* Percentage who moved from either Unemployed or Discouraged (and not in the labor force) in month N-1 to Employed in month N. *3* Percentage who moved from Employed in month N-1 to Unemployed in month N (Source: U.S. Bureau of the Census, Current Population Survey, microdata files)

throughout the postcrisis period so far, the unemployment rate has remained more than double its precrisis levels.

In thinking about the numbers cited above, it is important to keep in mind the absolute level of the unemployment rate. For example, 8.5% is the highest rate in 2011 that Fig. 4.2 shows among older American men. This figure means that 91.5% of these men who were in the labour force had a job.[7] Thus, we should consider that these unemployment data comprise a barometer of change in the economic environment for the pre-retired.

Important support for the indications of this barometer can be found in the labour force gross flows among older workers. Figure 4.3 shows our estimates based on information in the microdata files of the US Current Population Survey. These data are quarterly averages of monthly gross flows, not seasonally adjusted, for the age group 55–59. One curve (the proxy job offer rate) is for the percentage flowing from (a) Unemployed *or* "Not in the Labour Force and Discouraged" in a given month (N-1) to (b) Employed in the *next* month (N). Another curve (the proxy layoff rate) pertains to the move from Employed to Unemployed between two adjacent months. The final curve (job search abandonment rate) shows the percentage moving from Unemployed in month N-1 to "Not in the Labour Force" in month N (for an

[7]Many argue that the number without a job should be increased to include discouraged workers who were not in the labour force.

introductory discussion on labour force gross flows and their interpretation, see Boon et al. 2008). The universe comprises non-farm residents in the USA in both of months N-1 and N.

Labour market experts analyzing gross-flow patterns for the whole US labour force have reported the finding that the largest over-time change since the crisis has been in offerings of jobs (new demands for labour) and opportunities to start businesses (see, e.g., Lazear 2011). Figure 4.3 shows that this pattern also applies among older workers. At the two-digit level (speaking of percentages), our proxy layoff rate remained stable since the first quarter of 2008, showing a modest rise in the second quarter of 2009. In contrast, the proxy job-offer rate fell steadily from its precrisis level near 22% to well below 20% throughout 2009. In the fourth quarter of 2009, the rate was below 15%. Thus, there appears to have been a sharp drop in the job-offer rate among older US workers from the third to the last quarters of 2009.

The pattern of the rate of the flow from Unemployed in month N-1 to "Not in the Labour Force" (including both Discouraged and Other) in month N is consistent with the many media reports about older workers attempting to delay their retirements. Although the change in the rate of this flow is not great, there is a distinct downward trend from the precrisis quarters to those of 2009.

In sum, the gross flows suggest an intensification of pressure from unfavorable labour market conditions among older workers in the USA throughout the months of 2009. Signs of an upturn would have to wait until 2010. Figure 4.2 suggests that throughout 2010, the improvement in unemployment rates was modest. This pattern is a good indicator because the marked falls in the curve of the job offer rate coincide with sharp upturns in the unemployment rate.

The dominant explanations of the patterns of delay of retirement initially pointed to workers' efforts to recoup their wealth losses sustained in the financial markets. The statistical analysis in the next section suggests that the primary focus of explanation should be placed on factors which apply to a wider range of workers than those with major financial-market wealth.

4.3 Research Findings That Point to the Relevance of Risk-Anxiety

4.3.1 The Research Questions

This section provides a portion of the support for the argument that our society has entered an era in which the population at the main pre-retirement ages will be placing higher priority on personal-risk issues and on the associated acquisition of knowledge and skills to improve their risk management. It develops the support by probing statistically behind the reported decisions to delay retirement in Canada and the USA.

This statistical probing is guided by the following research question: What are some of the key factors that help to explain statistically the reported decisions to

delay retirement? In pursuing this question, our aim is to find out whether the contents of the key explanatory factors point in the direction of psychological forces for which aspects of risk and risk-anxiety are important.

4.3.2 The Data Sources

Microdata files arising from surveys conducted in Canada and the USA have been used to develop the results presented below. Our access to a dataset for a sample of near-retirees in Canada was very kindly provided to the authors by Desjardins Financial Security (DFS), one of Canada's leading financial-services firms. In October 2008, DFS commissioned a telephone interview survey conducted by SOM, a polling organization affiliated with Gallup. The universe comprised Canadian adults (18 years or older) who could be reached by telephone. The sample was obtained via the Canadian Ipsos/Reid Express Omnibus, which used random digit dialling. The sample size was 1,150, and there was a 70% response rate among the phone calls that were answered. The microdata file contains respondent weights developed to ensure that the weighted sample would reproduce the 2006 census on age-sex distributions in each of 13 regions of Canada. Sampling error margins were estimated and published for representative percentages considering design effects. For the entire sample, the maximum margin on a percentage was ±3.3% at a 95% confidence level.[8]

Our exploration continues with the usage of two datasets arising from US surveys. The first US dataset, provided by AARP, allows us to build upon the Desjardins data by adding behavioural variables to a model explaining the decision to delay retirement. The AARP survey obtained telephone interviews from a sample of 1,002 respondents aged 45 and older who were currently working, looking for work, or retired. It was drawn at random through the standard list-assisted random digit dialling (Weighted Type B RDD methodology). The interviews were conducted by Woelfel Research, Inc., from 12 to 23 April 2008. The results from the study were weighted by age and gender to reflect the actual proportions in the US adult population, based on the latest Bureau of Census population estimates. The margin of sampling error for the random sample of 1,000 is ±3.1%.

The second US dataset used here arises from the 2010 Retirement Confidence Survey of EBRI (Employee Benefits Research Institute) and Matthew Greenwald & Associates. This is the richest of the available sources concerning psychological and behavioural aspects of possible motivations for the delay of retirement among US older workers. Our access to this and other EBRI datasets used here was very kindly provided to the authors by Retirement Confidence Survey (RCS) signatories.

[8]When using subsets of a sample, all surveys used here present new issues as regards accurate sampling-variance estimates. These issues are in addition to those that arise from a complex sampling design. When information required to address this matter has not been published, we can confront sampling reliability problems by focusing on patterns that recur across subgroups and surveys (assuming that the universes are broadly similar in socio-economic and demographic structures). It is important to avoid emphasis on the specific values produced by an estimation procedure and focus more on patterns of variation.

The 2010 survey was EBRI's 20th annual Retirement Confidence Survey, and its universe comprises working age and retired Americans who could be contacted by phone. The survey was conducted in January 2010 through 20-min telephone interviews with 1,153 individuals (902 workers and 251 retirees) aged 25 or more. Random digit dialling was used to obtain a representative cross section of the US population, and a cell phone segment was included. The sample data were weighted by age, sex, and education to reflect the actual proportions in the national adult population, based on the latest Bureau of Census population estimates. When using the full weighted sample, the 95% confidence interval around the estimate of a percent is ±3 percentage points (for further details, see Helman et al. 2010).

4.3.3 Theoretical Framework

Explanatory analysis using observational data requires a theoretical framework. This guides model design, computational strategy, and data interpretation. The following is an outline of the framework adopted to guide the statistical analysis.

What are some of the key factors that could create a systematic pattern of variation in responses to the effects of the financial crisis within a population group? The factors include the following:

- The character and scale of the losses that have been inflicted upon an individual and/or his family
- The fullness of the awareness of that loss and its implications
- The psychological propensity towards panic response in the presence of losses of the scale encountered
- The extent to which previous risk management activities leave the individual with a sense of being able to cope with losses of that kind and degree, particularly the sense that the individual has access to, and control over, the instruments that would permit coping with the loss to take place
- Whether, for the particular type of loss, there exists a collective pooling of risk management resources which become a safety net available to individuals that have specific combinations of attributes
- The extent of the social support on which the individual can rely not only for therapeutic grieving but also for helpful brainstorming about alternative responses to the loss
- The patterns of behavioural reaction to losses that are promoted in the culture of the family or of that of a larger group with which the person feels a strong identification

When socio-economic variables are highly predictive of relevant psychological and behavioural forces, they tend to be influential in explaining the response to losses. If this high level of predictability is absent, static socio-economic, demographic, and cultural variables perform poorly in explaining the decision to delay retirement.

This last remark is a hypothesis that falls out of the theoretical framework. However, there is a stumbling block to more extensive use of the framework to lead to hypotheses or guide data interpretation. The designers of the questionnaires for the surveys used below did not have in mind our particular application of their data. Hence, we lack the means to link specific variables of the model to the psychological factors cited above.

4.3.4 Methodology

The outcome variable of the multivariate analyses has two values—the respondent either did or did not report a decision to delay her or his retirement. Thus, we will use logistic regression. The SPSS programme that we use assumes simple random sampling when computing standard errors and confidence intervals for parameter estimates. We know that this was not the sampling procedure used by SOM for the Canadian data source. It is unclear whether the other surveys whose data we have used had designs that approximate simple random sampling.

Without this information, we have taken one step that is commonly agreed among statisticians to reduce the errors arising from the assumption of simple random sampling. This step is to divide all respondent weights by the average weight within the relevant subsample. Additional comments about the assessment of statistical significance in parameter estimates are provided in notes to the tables that follow.[9]

Finally, implications of the omnipresence of very small subsamples in our analysis need a comment. In this chapter, the relevant subsamples, once we define narrow age groups of workers, are close to 200 in size. While larger sizes are desirable, samples of this size are common across social science, health sciences, and agricultural experimentation. Procedures to address statistical inference issues in the presence of such small samples are in the statistical literature, and we draw upon them or their underlying principles below.

4.4 Results

It seems helpful to recapitulate the research question: what are some of the key factors that help to explain statistically the reported decision to delay retirement as a response to the effects of the crisis on workers' lives? The Canadian Desjardins

[9] Among non-sampling errors, the one that is often called "unmeasured variable bias" merits a comment here. Methods of addressing this issue typically require a search for additional variables that are *thought* to have specific kinds of statistical association with one or more explanatory variables in the model (see Harkness and Newman 2003; Hosman et al. 2009). Specific *assumptions are then required* in establishing the procedure for adjusting the parameter estimates. How much bias correction will be achieved by applying the procedure is unclear, however, due to the assumptions required. In this work, we allow a predictor to stand for itself as well as for relevant variables not in the model.

Financial Survey of October 2008 will be the first dataset used in addressing this question. However, only a summary of the results is presented here, to conserve space. (A detailed version of the results will be available as a free Internet download to purchasers of the printed book.)

The analysis makes use of the subsample aged 50–64 who said they were not retired and had a job (including being self-employed) or were looking for work. Some 44% of these respondents reported that they had planned to delay their retirements.

The dependent variable has two values: the respondent either did or did not plan to delay retirement. Direct measures or proxies for five widely used demographic, socio-economic, and cultural variables comprise the explanatory variables of the model.[10] The other variables are sex, marital status, education, and household income. The model, which comprises only demographic and static socio-economic variables, performs poorly, being scarcely better than the null hypothesis model.

Let us turn now to the first US survey, that of an April 2008 done by AARP. We examined these data to see whether the poor performance of these demographic and socio-economic attributes is repeated and what happens to the goodness of fit to the model when we add pertinent behavioural or psychological variables.

With the AARP file, the dependent variable again has two values: the respondent either did or did not plan to delay retirement because of the impact of the financial crisis upon her or his life. The percentage reporting a plan to delay was 31% among respondents who were aged 50–64, had a job, and said they had never retired.

The model achieves a 12% reduction in the error of prediction of the null hypothesis model. The null hypothesis model would be very unlikely (probability <0.10) to produce a goodness of fit as strong as that of the adopted full model. The model's predicted responses, computed by SPSS, have a 71% concordance with the observed responses.[11]

In the AARP dataset, sex and household income contribute over one-half of the model's goodness of fit. Somewhat less than one-third is attributable to the combination of membership in a traditional (DB) pension plan, exposure to stock market losses, and mortgage fears. Exposure to stock market losses and mortgage fears are of special interest because of fears aroused by the financial crisis. Table 4.2 shows the patterns of their associations with the outcome variable of the model.

Notice that exposure to stock market losses has a Wald chi-square[12] that is much lower than that of mortgage fears. In addition, as we go from low to higher levels of mortgage fears, the probability of delaying retirement rises sharply. Other researchers

[10]The cultural variable is quite weak because it is the language of the interview.

[11]In all chapters where results of modelling are reported, tables showing detailed results for goodness-of-fit testing are being omitted from the book to save space. They are available from the authors and will be on the Internet as free downloads for use by researchers and graduate students.

[12]In interpreting the Wald chi-square values, focus on the comparison of values for two or more variables. The rank ordering of these values indicates their relative importance in contributing to the model's goodness of fit.

Table 4.2 Odds ratios for categories of selected predictor variables in a model that generates probabilities of delaying retirement, based on a sample that represents Americans aged 50–64 and in the labour force in 2008

Predictor variables		Relative contribution[a]	Odds ratio[b]
Sex		16%	
1. Male	1 vs. 2		0.6
2. Female	Ref.[c]		1.0
Race		3%	
1. White	1 vs. 2		1.4
2. Non-white	Ref.		1.0
Education		5%	
1. Not high school graduate	1 vs. 4		1.4
2. High school graduate	2 vs. 4		1.4
3. Bachelor's degree	3 vs. 4		1.6
4. Postgraduate degree	Ref.		1.0
Household income		44%	
1. Low	1 vs. 3		3.6
2. Medium	2 vs. 3		1.9
3. High	Ref.		1.0
Traditional pension plan		13%	
1. Yes	1 vs. 2		0.6
2. No	Ref.		1.0
Stock market exposure		2%	
1. Yes	1 vs. 2		0.8
2. No	Ref.		1.0
Mortgage fears		17%	
1. Slight or none	1 vs. 3		0.5
2. Somewhat fearful	2 vs. 3		0.7
3. Very fearful	Ref.		1.0

Source: AARP, microdata file of an April 2008 survey

[a] The Wald chi-square of a variable is the contribution of the variable to the model's overall Likelihood Ratio chi-square when the variable is the last one added to the model. This column shows the relative sizes (percentages) of the predictor variables' Wald chi-squares. These percentages comprise a rough gauge of their *statistical* importance among the set of predictor variables. Due to small sample size, household income is the only predictor that is statistically significant at the 15% level because only its Wald chi-square exceeds 6. The sum of the Wald chi-squares is 15

[b] Use odds ratios to compare the categories of a single variable. A ratio above 1.0 means the category tends to increase the probability of delaying retirement relative to the probability associated with the reference category. A ratio below 1.0 means the category tends to decrease that probability relative to that of the reference category, whose ratio is always 1.0

[c] Reference category

have found and offered explanations for weak effects of financial-market losses on labour market behaviour (see Colle and Levine 2009; Gustman et al. 2009).

In short, the results from the AARP dataset serve to support the idea that in understanding the decision to delay retirement across the spectrum of workers, a confidence factor deserves further attention.

In the EBRI dataset, 28% of the target population of workers aged 50–64 reported plans to delay retirement. This dataset provides two measures of confidence. One is the already introduced measure of confidence in one's ability to maintain a desired standard of living in retirement. The other measure is the extent of worry about possible future economic dependency on one's relatives.

The goodness-of-fit profile of the model used for the EBRI data is similar to that achieved with the AARP dataset. The model's improvement in the error of prediction of the null hypothesis model is 11%, and there is a good level of concordance between predicted and observed responses (74%). In addition, the null hypothesis model has a scant probability (0.05) of generating a fit at least as impressive as that achieved by the full model.

There would have been a much stronger performance of the model if the demographic and socio-economic status variables had not "fallen asleep". This is a repetition of what we saw in the Canadian dataset. Here, the model's goodness of fit depends heavily on the two confidence indicators. These and household income are the dominant contributors to the model's goodness of fit. All three contributions are statistically significant at the 10% level or better. Table 4.3 shows some details of the contributions of the two psychological variables.

For all three of these variables, the odds ratios seem mutually consistent. As confidence in ability to maintain a desired standard of living in retirement falls, the probability of delaying retirement rises sharply. Those with a high level of worry about possible future economic dependency on relatives are far more likely to delay retirement than the remainder of the population. Those with household incomes below the median are slightly more likely to delay retirement than those with household incomes above the median.

These data patterns suggest the hypothesis that the decision to delay retirement was, for many persons, a response to a fall in generalized confidence about their future in retirement. We further propose at a theoretical level (since no relevant measurement seems feasible) that this confidence drop would have triggered risk-anxiety. The net result will be to raise the profile of risk management issues in the lives of older persons. We predict that this will be a permanent rise among those who have little or no time left in their lives to recover from their losses.

4.5 Discussion

During the 2008–2009 period, between 20% and 40% of older jobholders in several developed countries had decided to delay retirement in response to the effects of the financial crisis. The higher percentages tended to be concentrated among workers in the prime ages of transition to retirement. It appears that in the USA, worker concerns intensified over the course of 2009. A substantial percentage of older workers having delayed or planning to delay retirement has persisted into 2011. Our data analysis points to an associated drop of confidence, and this is supported by the EBRI Retirement Confidence Surveys.

Table 4.3 Odds ratios for categories of selected predictor variables in a model that generates probabilities of delaying retirement, based on a sample that represents Americans aged 50–64 and in the labour force in 2010

Predictor variables		Relative contribution[a]	Odds ratio[b]
Sex		2%	
1. Male	1 vs. 2		0.8
2. Female	Ref.[c]		1.0
Race		6%	
1. White	1 vs. 2		0.6
2. Non-white	Ref.		1.0
Marital status		5%	
1. Married or common law	1 vs. 4		1.2
2. Separated or divorced	2 vs. 4		1.7
3. Widowed	3 vs. 4		0.8
4. Never married	Ref.		1.0
Education		4%	
1. High school or less	1 vs. 3		1.3
2. Some university	2 vs. 3		1.6
3. University degree	Ref.		1.0
Household income		30%	
1. Below median	1 vs. 2		1.2
2. Median or higher	Ref.		1.0
Workplace pension is major income source		0%	
1. Yes	1 vs. 2		1.2
2. No	Ref.		1.0
Home ownership		0%	
1. Yes	1 vs. 2		1.0
2. No	Ref.		1.0
Worry about depending on relatives		31%	
1. Little or no worry	1 vs. 2		0.4
2. A lot of worry	Ref.		1.0
Confidence in maintaining standard of living		17%	
1. Not confident	1 vs. 3		14.4
2. Somewhat confident	2 vs. 3		9.3
3. Very confident	Ref.		1.0

Source: EBRI 20th Retirement Confidence Survey, microdata file

[a]Based on the variable's Wald chi-square, which is the contribution of the variable to the model's overall Likelihood Ratio chi-square when the variable is the last one added to the model. This column shows the relative sizes (percentages) of the predictor variables' Wald chi-squares. These percentages comprise a rough gauge of their statistical importance among the set of predictor variables. Due to small sample size, household income is the only predictor that is statistically significant at the 15% level because only its Wald chi-square exceeds 6. The sum of the Wald chi-squares is 15

[b]Use odds ratios to compare the categories of a single variable

[c]Reference category

We suggest the hypothesis that responses to the financial crisis and its aftermath have entailed an increased awareness of retirement-related risks. We predict that in the affected populations, there will be a growing percentage who have developed a greater sense of the importance of attending to the effectiveness of risk management relevant to losses that might occur in later life.

Governments' responses to citizens' concerns raised by the crisis would suggest that leading policymakers have reached the same conclusion, even if their focus is mostly on raising levels of financial literacy in the population. Clearly, the raising of levels of financial literacy is a key contributor to strengthened risk management capacity in the population.

An important aspect of related demographic research attempts to identify major subgroups (multidimensional key demographics) that are showing unusually high or low levels of risk management activity. The exploration of the compositions and evolution of these groups will contribute to the advancement of substantive knowledge about population behaviour. In addition, the prospects for growth or decline, as well as regional redistribution, of these key demographics will have significant implications for private sector marketing projects and government support programmes. Analyzing these prospects is a core function of demography.

Chapter 6 offers a detailed illustration of a methodology for identifying key demographics in retirement risk management. The contribution of this methodology lies in its applicability where samples are too small to permit the estimation of the required probabilities by means of cross tabulations. As Chap. 6 employs a composite indicator of risk management activity, Chap. 5 provides a discussion that focuses on a narrowly defined outcome variable—the use of professional financial advisors.

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Chapter 5
Key Demographics in the Use of Professional Financial Advisors

Leroy O. Stone and Gerard Rainville

This chapter places a focus upon the use of financial advisors to illustrate how we identify distinctive multidimensional population segments (key demographics). It also analyses two important preconditions of that use: sensing a need for help with financial management and having trust in financial advisors. Our models are used to address two classes of research questions regarding these outcomes. First, what are the main factors that seem helpful in predicting them, and what are their patterns of association with the outcomes? Second, concerning the utilization of professional financial support, what are the major distinctive population segments in Canada and the USA? In responding to these questions, the text outlines a theory about the factors in the use of professional financial advisors. The analysis employs microdata files from three 2009–2010 surveys. Two were conducted in Canada and one in the USA. The discussion section presents practical lessons based on the results of the statistical analysis. It places a spotlight on the weak gender differentials found, suggesting that this pattern may point to an important challenge facing the providers of financial services.

5.1 Introduction

Financial concerns were at the core of the slump in pre-retiree confidence that has been reflected in recent surveys taken in several countries, and highlighted in Chap. 4. In addressing these concerns, the use of professional financial advisors is an

The views expressed in this chapter are those of the authors and not necessarily of AARP.

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important element of personal risk management. This chapter focuses on the usage of financial advisors, employing this focus to illustrate how we identify distinctive population segments (key demographics).

Strong support for this focus comes from surveys done in 17 countries to support HSBC's sixth annual global study into the future of retirement. The study reports finding a "clear 'advice advantage' for those who seek professional financial advice"[1] (HSBC 2011). HSBC's report focuses on what it calls "the planning premium" and the central role of the advisor in plan preparation. This focus provides a spotlight upon our multivariate analyses of aspects of the usage of professional financial advisors.

We use several population attributes to define a distinctive population segment (a key demographic). Attributes that are important in determining persons' usage of professional financial advisors are prominent in defining a segment. A key hypothesis here is that usage of these advisors depends on specific *combinations* of these attributes. Different combinations might predict a given outcome at the same level of probability.

The utilization of professional financial advisors usually has important preconditions. Accordingly, the statistical analysis below includes work which addresses three linked outcome variables: sensing need for help with financial management, having trust in financial advisors, and actually making use of them.

5.2 Past Research on Help-Seeking Behaviour Concerning Financial Management

Help-seeking behaviour in addressing financial management challenges has already been studied in social science papers going back to the 1990s. The theoretical ideas, selection of explanatory variables, and statistical results presented in these papers provide a helpful context for the illustration of key demographics that follows.

Among the relevant studies published since the 1990s (for a review, see Evans 2009), three make important contributions to the construction of the framework for the analysis that follows. Evans (2009) used data on married-couple households from the 2004 Survey of Consumer Finances in the USA to examine gender differences in the use of the services of financial planners about savings and investment. Especially helpful for this analysis is the grounding of Evans' work in a theoretical framework called "economics of information". This framework was developed by Stigler (1961). It was further refined by Satterthaite (1979). Snoke et al. (2010) analysed the propensity to seek financial advice in a universe comprising persons aged 45–62 years in 2007 (baby boomers). Their data source was Wave 7 of the

[1] Reproduced with permission from *The Future of Retirement: The Power of Planning*. Published in 2011 by HSBC Insurance Holdings Limited, London.

national Household Income and Labour Dynamics in Australia (HILDA). This study is useful in providing a perspective on relevant population behaviour patterns beyond North America. In addition, it is a helpful pointer to important findings of previous studies of the search for financial advice.

Joo and Grable (2001) is especially helpful because of the major focus that it places on cultural and social-psychological factors as partial determinants of help-seeking behaviour relevant to financial management. This focus reflects their reliance upon the theoretical work concerning help-seeking behaviour developed by Katona (1980) and Grable and Joo (1999). Using the 1998 Retirement Confidence Survey of the Employee Benefit Research Institute (EBRI), Grable and Joo (1999) analysed usage of professional financial advisors. Their explanatory variables included attributes, behaviour, and attitudes.

5.3 Theoretical Framework and Research Questions

An analysis that focuses on the utilization of professional financial advisors would be enriched if it included two related outcomes. The first outcome is a person's development of a sense of need for assistance from others to address their financial management challenges. Once the sense of the need becomes sufficiently strong, approaching professional financial advisors presupposes the development of a certain minimum level of trust in this source of advice. For related discussion of stages in processes that lead to use of the services of these advisors, see Joo and Grable (2001).

At least three quite different situations can bring a person to sensing a need to address financial management issues, and then moving on to deciding to take some action relative to the need. The three situations are as follows: (1) there is an accumulation of a surplus available to be invested in some way, (2) a costly event has happened and it requires disrupting the existing pattern of expenditures to address its consequences, or (3) there develops the conclusion that by changing the pattern of current expenditures, a surplus might be generated from the existing flows of income or the stock of wealth. This third route may be the result of a combination of newly arriving information combined with stimulation arising from within the person's social network. In any of these three circumstances, the individual may decide to take some action to address financial management concerns.

Following the decision to act, there may be a later decision to seek help with financial management. The decision to seek help falls out of a prior decision about how far to go in taking action. Here, the phrase 'how far to go' refers to the range of efforts that the individual will make and the classes of support that he or she might seek.

When deciding how far to go, an initial cost-benefit assessment is made. Both costs and benefits are likely to be very imprecisely anticipated at this juncture. (For related discussion, see Evans 2009.) The person acts largely because of an intuition about what scale of effort would be affordable and worthwhile. The issue of whether

he or she will decide to use personal resources, and avoid seeking help from others who are beyond the immediate family, is also relevant here.

The decision to act may not be followed by the intended action. Some barriers may impede or block action. Among these barriers is the failure to satisfy all the requirements of the planned action. A person may be unaware of the full set of requirements until he or she attempts to undertake the action.

A common barrier arises when there is a set of competing priorities in the expenditure of one's time and attention. The planned action may get less than top priority and eventually may not be implemented due to this competition among priorities. The resolution of the competition will depend on personality forces. Often, these are largely independent of the depth or breadth of knowledge acquired by the individual. That is, an individual with all the relevant knowledge as well as the requisite resources may find that he or she is unable to allocate to the matter a very high priority, despite having decided to take the planned action.

In developing the planned action, the decision-maker often addresses the question of whether to seek help from others, and if so, what are the acceptable sources of this help. He or she may decide to proceed without the assistance of any second party. When the person decides to seek assistance, the set of possible second parties can be grouped into three subclasses: (1) members of the social support network, (2) those who would make available their services for a fee (which need not be paid by the individual—e.g. it could be paid by the person's employer), and (3) others. In the second category of persons are representatives of organizations, such as members of institutions selling financial services or related planning support.

Whether the person executes the planned action without seeking help from others will depend on at least three factors: (1) the individual's sense of financial self-sufficiency, (2) her or his degree of trust in the expected helpfulness of the relevant second parties, and (3) her or his degree of willingness to reveal some private details about one's life, assets, and debts.

If the sense of self-sufficiency is high, or all degrees of trust are very low (a different degree for each possible second party), or there is little willingness to reveal private details about one's life or assets and debts, it is likely that the person will act without relying upon assistance from any second party. The actual probability of seeking such help will depend on the strengths of the three forces just cited.

Once an individual decides to rely on assistance from others, he or she places the three types of sources of help in a priority order. If there has been no previous usage of professional financial advisors' services, members of the person's support network will be placed at the top of the priority order. When the help that they provide is deemed to be sufficient, no other second parties would be sought.

When the help provided by members of the support network seems insufficient, the person's action will depend on whether he or she has had a previous encounter with professional financial advisors. If there has been no such encounter, the probability of initiating one will depend on her relevant education, the amount of approval received from important 'significant others' among members of the support network, and the trust that she has in the class of professional financial advisors.

If the person has had previous usage of the services of professional financial advisors, the experiences associated with this usage will powerfully influence her or his rank ordering of the three sources of help cited above. Without knowledge about how the decision-maker has reacted to the experiences of this past usage, it is practically impossible to predict in advance the priority that he or she will place upon future access to the services. A key element of the interpretation of the past experiences is the manner and depth of their effect on the individual's sense of trust in professional financial advisors.

Parties outside the informal support network present different barriers in the pathway towards to their assistance—requirements that must be met in order to gain access. The decision-maker must consider her or his capability to satisfy these requirements. If the person believes that he or she can meet the requirements, he or she would go on to consider the expected degree of benefit that would be received from the alternative second parties.

At this point, another wave of cost-benefit analysis arises, and the person's thinking now becomes more precise regarding the balancing of costs and benefits. Again, we are talking about expected benefits and anticipated costs. The key variables here are not the real costs and benefits because some of them are not fully known and may be even entirely unknown.

Non-financial as well as financial factors are pertinent to the costs and benefits. The former include the perceived quality of the experience of dealing with a particular second party (also known as the 'process utility'—see Tyler 2006) and a sense of whether the individual would build valuable social capital in the process. The willingness to reveal private details is also highly relevant.

Even after weighing costs and benefits and concluding that the benefits are so much greater that it is worthwhile to seek assistance in dealing with financial management challenges, various factors might impede or block seeking and using that professional assistance. Important among these factors is proximity to the expected date of retirement—this being defined as the intended final withdrawal from the labour force. The closer the decision-maker is to this date, the greater is the probability that taking action would receive high priority.

All the forces mentioned above depend partly on cultural background, cohort membership, education, the influence exerted by the individual's support network, and the presence of others whose economic circumstances are dependent upon resources provided by the decision-maker. The individual's occupational and industrial affiliation is also relevant because this is a key factor in access to useful information, as well as being a source of arrival of new influential information.

The foregoing is an incomplete sketch of theory about the factors in the use of professional financial advisors. This sketch draws upon ideas presented in papers by Grable and Joo (1999, 2001), Joo and Grable (2001), Evans (2009), and Knoll (2010). As noted above, these authors have anchored their theoretical work on original contributions prepared at much earlier dates (references provided above).

This sketch serves two purposes. It implies a set of guidelines about the variables that should be taken into account in setting up explanatory models for the key dependent variables in the statistical analyses below. It also forms part of what

might be termed an 'interpretation paradigm' that lies behind what we will say about the message being conveyed by the patterns that would be found as a result of the analysis.

What are these dependent variables? They are statistical indicators of the following three outcomes: (1) the development of a sense of need for assistance from others in addressing financial management challenges, (2) the emergence of trust in professional financial advisors as a source of assistance in addressing these challenges, and (3) the utilization of professional advisors.

We address two classes of research questions about these outcomes. First, what are the main factors that seem helpful in predicting them, and what are their patterns of association with the outcomes? Second, what are the major distinctive population segments (or key demographics) in Canada and the USA regarding the utilization of professional financial support?

5.4 Data Sources

The data sources used below are microdata files based upon two surveys done in Canada and one in the USA. Our US dataset arises from the 2010 Retirement Confidence Survey of EBRI and Matthew Greenwald & Associates. Its properties were described in the preceding chapter.

Regarding the data from Canada, we are deeply grateful to Desjardins Financial Security (DFS) for allowing us to work with the results of their 2010 Retirement Survey. The second Canadian dataset is the public use microdata file of the 2009 Canadian Financial Capacity Survey (CFCS), conducted by Statistics Canada. The results of the survey provided the principal data support for the work of the federal Task Force on Financial Capacity.

The 2010 Desjardins Financial Retirement Survey was an online survey that used the "I Say Panel" of Ipsos Descarie. It was designed to measure attitudes, perceptions, and behaviour of pre-retired Canadians relative to their retirements. After weighting, the data were considered representative of the following universe: pre-retired Canadians aged 18 or more who were employed, seeking employment, or were students (see Ipsos Descarie 2010). They were also Internet users. The weights were based upon the composition of the Canadian population by sex, age, and region of residence, according to Statistics Canada estimates. The survey database comprises 3,356 completed questionnaires, which arose from a 15% response rate.

Since the sample design was non-probabilistic, a routine computation of standard errors in this dataset is not appropriate. Estimates presented below from this survey are offered as exploratory data where the focus is placed entirely on finding meaningful *patterns of variation* across population subgroups. Thus, no single figure will receive attention.

The reliability of these patterns of variation will be assessed in the light of related findings from other studies, the theoretical framework presented above, and the results of replication of measurement across key population subgroups. Future work

can improve this data-quality evaluation effort by analysing the internal variability of selected measures among subsamples after post-stratification, which will ensure that within each stratum, there are sampling weights that can be used to reproduce known population totals.

Some pointers to possible bias caused by self-selection in the online-survey sample can be found by comparing key aspects of demographic composition between Ipsos Descarie's online sample for 2010 and the sample of the 2009 Desjardins survey. The latter used probabilistic sample selection and telephone interviewing. We have made this comparison by using the compositions by sex and age of the population aged 20–69. The process began with a benchmark. This comprised the compositions of the relevant part of the Canadian population in both 2009 and 2010. These data are Statistics Canada estimates. In the two Statistics Canada estimates, the distributions are extremely close, as expected. In terms of the distribution by sex, nearly the same weighted proportions of men are found in the two Desjardins surveys. The age distribution of the 2010 survey is closer to the Statistics Canada benchmark than that of the 2009 survey. However, the latter has a sample size one-half as large as the former. The survey of 2009 had a slight overestimation of the population aged 55 or more if one accepts as the standard the level estimated using the 2010 survey. Generally, using age and sex, there is no great compositional divergence between the two surveys, a result which offers a hint that self-selection has not greatly distorted the online Ipsos Descarie sample.

The 2009 CFCS used telephone interviewing of respondents selected via the well-known Random Digit Dialing (RDD) technique. Sample selection was done within each of 27 strata (for details, see Statistics Canada 2010). Over 50,000 telephone numbers were called to produce a final sample size of 27,555. The overall response rate was 56%.

Respondent selection involved two steps: first, households were selected using RDD, and then one individual from the contacted household was chosen. The ages of the household members were used to determine who in the household would be selected for the interview. Respondents were interviewed in the official languages of their choice, and interviews by proxy respondents were not permitted.

The survey's universe comprised all persons 18 years of age and over living in Canada between February and May 2009 with the following exceptions: residents of the Yukon, Northwest Territories and Nunavut, full-time residents of institutions, and those living in households that did not have telephone landlines. The weighting scheme was designed to reflect those who live in private households without landlines.

With multistage stratified sampling and unequal probabilities of selection of respondents, standard errors computed routinely from statistical packages are not appropriate with the data from the CFCS. This problem is reduced somewhat in the estimation of parameters of a multivariate analysis by transforming the weights of the subsample so that the average weight is one.

Precise variance estimates require detailed knowledge of the sample design, and this information is confidential. However, we achieve reliable findings by means of the following procedures. First, the analysis focuses on *patterns of variation* shown

among odds ratios instead of upon the actual level of a specific ratio. A certain pattern in the data should recur across subgroups of the population. In addition, it should be consistent with expectations based on our theory and on comparable results reported by other researchers.

In any event, the documentation for the survey (Statistics Canada 2010) contains an excellent and extensive discussion of the use of tables of coefficients of variation. Unfortunately, these tables do not apply to the particular types of estimates presented below (they deal with the estimation of integers and ratios of various kinds).

5.5 Sense of Need for Professional Support in Addressing Financial Management Issues

Most persons would agree that having a sense of need for professional support in financial management is an essential step towards the use of that support. The 2010 Desjardins survey provides a basis for applying a model to examine the relative statistical importance of factors that help to explain that sense of need. The relevant survey question asked respondents to indicate their degrees of agreement with two assertions about their need for financial planning advice in the context of their preparation for retirement.

Some 1,009 among 1,093 pre-retired persons aged 50–83 provided usable responses (84 persons were non-applicable or were non-respondents). We classified the responses of the 1,009 persons into four levels as follows:

Low (strong disagreement)—21%
Moderately low—25%
Moderately high—28%
High (strong agreement)—18%
Total respondents—1,009

Figure 5.1 provides an outline of the theory that underlies the statistical model. This theory is based upon the framework provided in Sect. 5.3. The outcome variable of the model is the one shown at the extreme right of the diagram—sense of need for professional advice. All other names in the diagram represent the predictor variables, excepting the name "unmeasured factors". This name stands for relevant factors that are omitted. Omission happens for a variety of reasons. A common reason is that the data needed to measure these factors are not available.

Variables with circles around their names are not influenced by other variables in the model, according to our theory. These are called the "Level 1 variables" of the model (or the "exogenous variables"). Arrows start from Level 1 variables and point towards others which they influence directly, again according to the theory. The latter are the Level 2 variables. From each level except the last, there are arrows that point to other variables that they influence directly. At the extreme right of the list of predictor variables are those from which no arrows begin. They, like all the others,

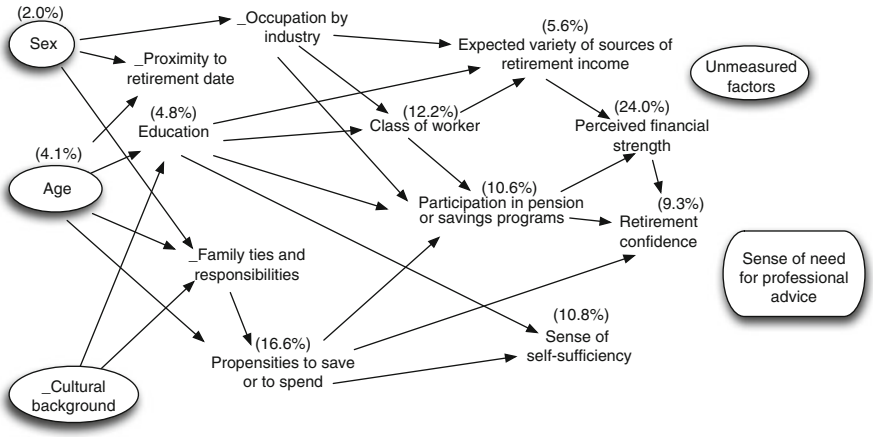

Fig. 5.1 Schematic diagram of the theory concerning causal linkages among predictor variables, with data on the relative importance of the predictors, in modeling sense of need for professional help with financial management (percentages show the predictors' relative contributions to the model's goodness of fit). Note: An underscore at the start of a name means that the variable was not measured (Source: 2010 Desjardins Financial Retirement Survey)

influence the outcome variable,[2] but their influences are constrained by the functioning of variables that "send" arrows to them.

For example, confidence about one's future in retirement (called "retirement confidence" in the diagram) is influenced by one's perceived financial strength. The latter depends on the variety of sources of retirement income to which the person will have access. Education, as well as the combination of occupation and industry, influence this variety. Education is in turn influenced by age.

The available survey database does not provide measures for each of the factors mentioned in Fig. 5.1. Names without numbers above them point to variables that cannot be measured from this database. They are shown in order to contribute to the completeness of the theory.

In this work, the sense of need for professional advice was measured as a variable with more than two rank-ordered categories. Odds ratios are used to measure the pattern of association of a predictor variable with the outcome variable. These odds ratios display the tendency of a change from one category to another of the predictor variable to raise or lower the probability of a particular value of the outcome variable.

However, it is difficult to interpret odds ratios when the outcome variable has more than two rank-ordered categories and the proportional odds assumption fails

[2] The diagram should show arrows leading to the outcome variable, but we omit them when they make the diagram too cluttered. In any event, the principal purpose of the arrows is to reveal what the theory hypothesizes about the network of influences flowing among the predictor variables. This network affects how the statistical "force" of each variable is measured later.

in logistic regression. In this case, we fit a set of nested binary logit models (see Friendly (1991) for supporting discussion and Stone and Nouroz (2006) for a detailed illustration).[3]

The most important of these models is that in which the highest and lowest categories of the outcome variable are compared (here $N=381$, and not 1,009 cited earlier, because only respondents in these two categories are considered in the computations). To simplify the presentation, and without any substantial loss to our central message, what follows pertains only to this model.

The goodness of fit achieved by the model lies in the upper half of the range of acceptable levels for studies where the unit of observation is an individual. For example, the adopted model classified 75% of the cases correctly (a respondent is in the same category of the outcome variable for both the model and the observed data). This represents a 25%-point improvement over the performance of the null-hypothesis model.[4] Why this level of goodness of fit is acceptable can be understood by considering the implications of our theoretical remarks, given earlier, concerning important personality and family-level factors (not measured in the model) that bear upon moving towards the use of professional support in addressing financial management issues.

The numbers shown above the names of variables in Fig. 5.1 represent the relative contributions of the variables to the model's goodness of fit. Although these numbers are percentages, their precise values should be treated with caution. What is more important is the pattern of their rank ordering, especially where there are large differences among the percentages. Based on this rank ordering, the following variables of the model are key determinants of sense of need for professional support in addressing financial management issues:

- The perceived strength of one's financial position
- The propensity to save instead of spending income that is surplus to the basic needs of daily living
- Participation in pension and retirement savings programmes
- Sense of financial self-sufficiency
- Confidence about one's future retirement
- Class of worker (self-employed, employee, other)

[3] When the outcome variable of the adopted model has rank-ordered categories, SAS computes parameter estimates as if they are invariant as we move from one category to another (this is a simplified way of stating the proportional odds assumption). SAS also computes a test to be used to gauge when the assumption fails. Friendly 1991 provides a procedure to be used when the assumption fails, and it involves a set of nested binary logit models.

[4] A table showing properties of the fitted model and at least two measures of goodness of fit should be presented here. However, several models are fitted to support the discussion in this chapter, and these tables simply describe properties of our chosen statistical models rather than patterns in real populations. For these reasons, we have prepared and retained all these tables concerning goodness of fit for distribution on demand to readers who might like to see them. These tables will also be available as a free download from the Internet.

Keep in mind that these predictors influence one another (see Fig. 5.1). Discussions which treat them as mutually independent explanatory factors are misleading.

The patterns of association of individual predictor variables with the outcome variable are also of interest and sometimes importance. Evidence concerning such patterns can be computed from cross tabulations before any multivariate analysis is done. However, the evidence provided by odds ratios, where other variables in an explanatory model have been appropriately taken into account, is more useful. Because the sampling design prohibits a routine calculation of standard errors, we limit information about the key patterns to textual comments.[5] Key findings, after holding constant the effects of other predictor variables in the model, are the following:

- As the strength of the person's financial situation increases, the probability of sensing a need for help decreases.
- A high tendency to save instead of spend surplus income is associated with lower than the average probability of expressing a need for help.
- The self-employed are much less likely to express a need for help than employees.
- Those at the highest levels of perceived self-sufficiency in financial management are among the least likely to express a need for help.

5.6 Trust in Professional Financial Advisors, Analysis Using the 2010 Desjardins Financial Retirement Survey Data

Trust in professional financial advisors is usually a prerequisite for the actual use of these advisors. The 2010 Desjardins Financial Retirement Survey database contains questions which provide an opportunity to model trust in advisors as an outcome variable. However, the survey questions were focused upon recent *change* in the respondent's level of trust. Respondents were asked whether their confidence in financial institutions and advisors had changed during the preceding year, noting that this was a year of highly publicized scandals in certain financial services.

We used the responses to these two questions to define "TrustDecline", which has the following levels:

TrustDecline = 2 (trust declined)—39%
TrustDecline = 1 (trust stayed level or increased)—55%
TrustDecline = 99 (non-response or don't know)—6%
Total—1,093

[5] The preceding footnote has referred to supporting documentation that will be available free on the Internet. This documentation will include tables of odds ratios that seem to provide useful information (being consistent with findings from other studies and with well-accepted theory) but which are excluded from the book because aspects of the sampling design imply that the display of detailed sets of numbers from a particular database is inappropriate. A case in point here comprises odds ratios computed from the Desjardins Financial 2010 Retirement Survey.

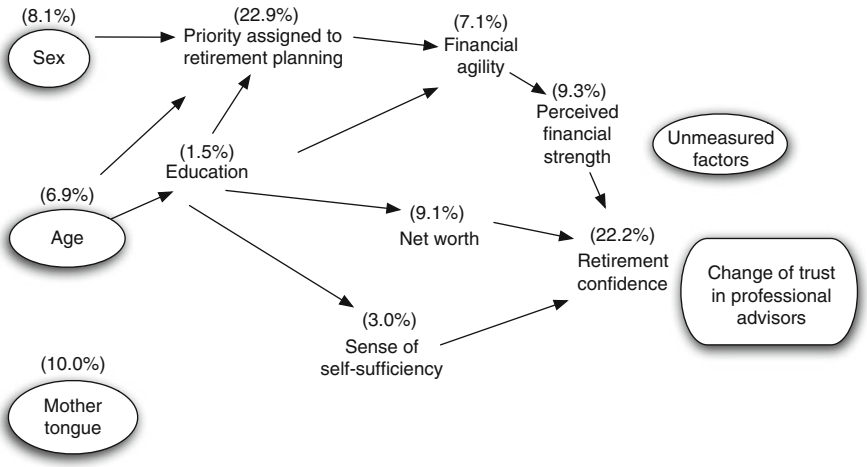

Fig. 5.2 Schematic diagram of the theory concerning causal linkages among predictor variables, with data on the relative importance of the predictors, in modeling change in level of trust in professional financial advisors (percentages show the predictors' relative contributions to the model's goodness of fit) (Source: 2010 Desjardins Financial Retirement Survey)

However, after dropping inapplicable cases or those with incomplete responses on any of the variables included in the model, the sample size fell to 674.[6]

Figure 5.2 is a diagram of the theory behind the model. The variables are limited to ones that are measurable in the available data. The outcome variable of the model is a change in the respondent's level of trust in professional advisors. The presentation of Fig. 5.1 contains a detailed explanation of how to interpret the network of arrows among the predictor variables of the model. In addition, it stated the reason why some variables' names are placed within circles. Below, we present some features of the network of predictors shown in Fig. 5.2, and this will be done without a detailed explanation of the kind given with Fig. 5.1. The reader is invited to revisit that exposition as needed.

Here is a subset of the patterns of influence that the theory hypothesizes. Confidence about one's future in retirement (called "retirement confidence" in Fig. 5.2) lies at the end point of influences flowing among several of the predictor variables. The perceived strength of one's financial position, net worth, and sense of

[6] An important component of the supporting documentation to be available free on the Internet will be the presentation and discussion of data about compositional differences between the following two subpopulations: (1) that formed by respondents who have been excluded from a model due to inadequate data and (2) the subpopulation comprised of those included in the model. The potential for bias in parameter estimates due to the exclusions will be explored along with supporting computations. However, it should be understood that the effect of the exclusions is to alter the universe to which generalizations can be made based on the estimated parameters. Once this adjusted universe is accepted, bias *due to the said exclusions* disappears.

self-sufficiency influence retirement confidence. Financial performance (called "financial agility" in Fig. 5.2) influences the perceived strength of one's financial position. It is in turn influenced by the priority assigned to retirement planning. Both depend on education.

The adopted model's goodness of fit is acceptable. It classified two-thirds of the cases correctly, which is a 33%-point improvement over the performance of the null-hypothesis model.

The numbers shown above the names of variables in Fig. 5.2 represent the relative contributions of the variables to the model's goodness of fit. Among the predictors of change and trust in professional financial advisors, priority assigned to retirement planning and confidence about one's future in retirement are by far the largest contributors to the performance of the model. They are followed by mother tongue, perceived strength of one's financial situation, and net-worth ranking.

Highlights of the patterns of partial association of the statistically most important predictor variables with the outcome variable include the following:

- As the priority assigned to retirement planning increased, stability or increase in the trust in professional advisors was more likely.
- As confidence about one's future in retirement increased, the more likely was the respondent to maintain or increase her or his level of trust in professional advisors.
- Among three mother tongue categories, stable or increased trust was most likely among those with English mother tongue.

In their pioneering work concerning help-seeking behaviour regarding financial management, Grable and Joo (1999) and Joo and Grable (2001) highlight the importance of attending to personality factors and subjective variables when trying to predict who will seek assistance from professional advisors. The 2010 Retirement Survey of Desjardins Financial contains data patterns that support this focus. The analysis presented above placed a spotlight on the perceived strength of financial position, the sense of self-sufficiency in addressing financial management issues, the priority assigned to retirement planning activities, and confidence about one's future and retirement. It also pointed to the relevance of background variables such as age, sex, and mother tongue, while suggesting that they are of lesser causal force. This information provides a useful context as we move on to the data of a much larger survey where traditional probability sampling has been used. This allows us to strengthen the quality of the parameter estimates.

5.7 Trust in Professional Financial Advisors, Analysis Using the 2009 CFCS Data

The 2009 CFCS allows us to continue the story concerning key factors that help to predict the level of trust in professional advisors. Respondents were asked whether they supported an assertion about their tendency to trust and accept

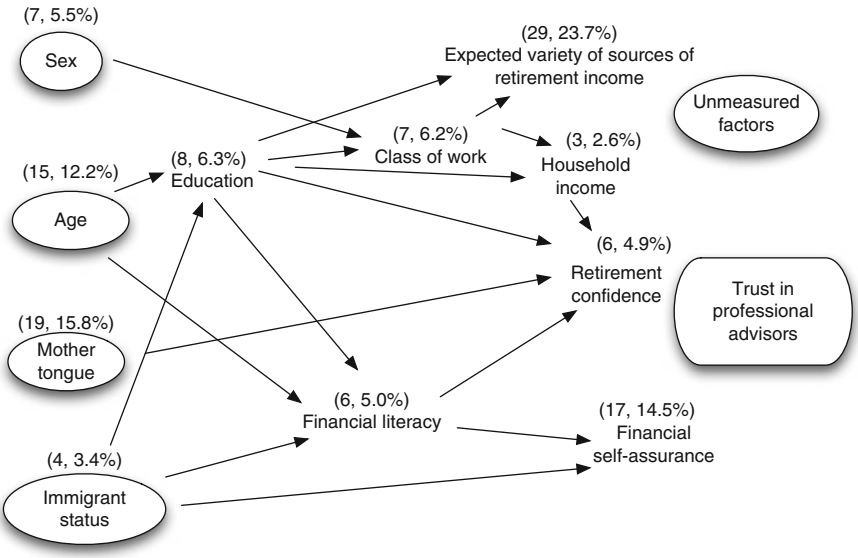

Fig. 5.3 Schematic diagram of the theory concerning causal linkages among predictor variables, with data on the relative importance of the predictors, in modeling level of trust in professional financial advisors (numbers within parentheses are Wald chi-squares and their percentage contributions to the model's goodness of fit) (Source: Statistics Canada, 2009 Canadian Financial Capability Survey)

recommendations from professional advisors. The CFCS database contents about this item serve as the outcome variable for our model, whose theoretical basis is sketched in Fig. 5.3.[7]

In this model, three predictors have no arrows going from them to other predictors. They are the expected variety of sources of retirement income, financial self-assurance, and retirement confidence. Household income is a key determinant of retirement confidence. Influences flowing into these factors come from education, financial literacy, class of work, and mother tongue. Sex, age, and immigrant status serve as relevant background factors. All these factors have at least a potential to affect directly the outcome variable. However, as just noted, in many cases their influences are constrained by others in the model.

The goodness of fit achieved by the model is acceptable. For example, the adopted model classified 66% of the cases correctly, which is 16% points better than the performance of the null-hypothesis model. An alternative goodness of fit measure (the percentage reduction in the error of prediction of the null-hypothesis model, based on the likelihood ratio chi-square) seems low at 8.3%. However, this is a

[7] Differences between questions used in the CFCS and the Desjardins Financial surveys lead to important differences between the sets of variables listed in Figs. 5.2 and 5.3. Generally, all of Figs. 5.1, 5.2, 5.3, 5.4, and 5.5 are affected by what is available in the surveys that supplied the data used in the analysis.

typical level for this measure in models of inter-individual variation. This variation can be easily dominated by seemingly random personality factors.

The percentages shown above the names of variables in Fig. 5.3 represent the relative contributions of the variables to the model's goodness of fit. The first number above each name is the variable's Wald chi-square, which is the basis of the percentage shown. We can regard Wald chi-squares of 6 or more as statistically significant at least at the 15% level, given the complexity of the sampling design.[8]

Among the predictors of trust in professional financial advisors, expected variety of sources of retirement income, financial self-assurance, mother tongue, and age are the strongest contributors. Among these contributors, the expected variety of sources of retirement income is dominant, having a very strong Wald chi-square of 29. A respondent at the top level of this indicator was expecting to receive retirement income from all four of the following sources: benefits from a government pension or income support programme, income from a workplace pension plan, personal savings, and a reverse mortgage. Nearly one quarter of the model's goodness of fit is attributable to this variable.

The pattern of this factor's partial association with the outcome variable is consistent with what one would expect after studying the results of the analysis of the 2010 Desjardins Financial Survey data. As the variety of retirement income sources increases, the greater is the probability that the respondent would express trust in professional financial advisors (see the odds ratios in Table 5.1).

The measure of financial self-assurance is another statistically important factor. Its partial association with the outcome variable is consistent with the pattern shown in the 2010 Desjardins Financial Survey data. To construct this variable, we used the respondent's report of agreement or disagreement with assertions about her or his practices in approaching financial issues: the assertions dealt with (a) her or his knowledge of financial products, (b) active monitoring of financial information, (c) knowledge about investment options and how to make use of them, and (d) activity in doing research to support financial decision-making.

In defining the variable used in the model, a respondent received one point for giving a positive answer to the question that dealt with each of the four topics just cited. Thus, a respondent at the top level of this indicator gave a positive response to all four of the questions. More than 10% of the model's goodness of fit is attributable to this variable, and its Wald chi-square stands at 17.

Regarding the pattern of this factor's partial association with the outcome variable, the data show that persons rated at the lower levels of financial self-assurance

[8] This chi-square measure does not make use of estimates of standard error. It measures what the variable contributes to the model's overall likelihood ratio chi-square when it is the last variable that is entered into the model fitting process. (This is the so-called Type 3 Effect shown in the SAS PROC LOGISTIC output.) When probability sampling is used, as is the case with the CFCS, there is often a good basis for the assumption that the measure has a chi-square probability distribution when the null hypothesis is true. In this situation, the size of the Wald chi-square along with the associated degrees of freedom can be used to gauge statistical significance and establish confidence intervals. However, the complexity of the sampling design becomes a factor in gauging what is its correct probability distribution.

Table 5.1 Odds ratios for categories of selected predictor variables in modelling level of trust in professional financial advisors, pre-retired Canadians aged 45–69 in 2009

Predictor variables		Wald chi-square[a]	Odds ratio
Expected variety of sources of retirement income		29	
1. Level 0 (narrowest)	1 vs. 4		0.4
2. Level 1	2 vs. 4		0.9
3. Level 2	3 vs. 4		1.0
4. Level 3 (widest)	Ref.[b]		1.0
Mother tongue		19	
1. English	1 vs. 3		1.4
2. French	2 vs. 3		2.5
3. Others	Ref.		1.0
Financial self-assurance		17	
1. Level 0 (lowest)	1 vs. 5		1.4
2. Level 1	2 vs. 5		1.4
3. Level 2	3 vs. 5		2.1
4. Level 3	4 vs. 5		1.0
5. Level 4 (highest)	Ref.		1.0
Age		15	
1. 55–59	1 vs. 3		1.3
2. 60–64	2 vs. 3		0.8
3. 65–69	Ref.		1.0
Education		8	
1. Less than a high school diploma	1 vs. 6		1.2
2. High school diploma	2 vs. 6		1.5
3. Some college or vocational	3 vs. 6		1.4
4. College or vocational diploma	4 vs. 6		1.6
5. Undergraduate degree	5 vs. 6		1.4
6. Graduate degree	Ref.		1.0

Source: Statistics Canada, 2009 Canadian Financial Capacity Survey, Public Use File

[a] The Wald chi-square values shown here measure what the variable in question would add to the overall likelihood ratio chi-square of the model if the variables were entered into the model in a stepwise fashion and the variable in question was the last one entered

[b] Reference category

are much more likely to express trust in professional financial advisors than those rated at the top levels (see Table 5.1).

Two demographic variables make substantial contributions to the performance of the model: age and mother tongue. As Table 5.1 shows, the probability of having trust in professional financial advisors is highest in the youngest of the three age groups considered (55–59, 60–64, and 65–69). It is lowest by far among those with mother tongue that was neither English nor French and is much higher among those with French mother tongue compared to those with English mother tongue.[9]

[9] This pattern may appear to be inconsistent with that found in the data from the 2010 Desjardins Financial survey. However, the outcome variable used in that analysis is change in confidence since last year rather than the current level of confidence.

The preceding review of statistical analyses deals with sensing the need for professional assistance regarding financial management challenges, as well as trust in professional advisors. This review sets the stage for the analysis that places a focus on the actual utilization of professional financial advisors.

5.8 Utilization of Professional Financial Advisors Using EBRI Data

Like Joo and Grable (2001), who also used the EBRI Retirement Confidence Survey (the 1998 edition), the universe for this analysis comprises employed pre-retired persons aged 45 or more in 2009 who reported that they had sought some type of help in addressing financial management issues. That is, those who reported seeking no help are excluded from the universe.

The outcome variable for this analysis has been defined by drawing upon respondents' answers to questions about their searches for help from a professional who provided financial advice and coaching related to investment issues. The period of reference was the preceding year.

Our outcome variable has two categories:

Yes—84%
No—17%
Total—200

This is the total of those who had sought advice from at least one source. The possible sources included the employer, a pension fund management company, staff at a financial institution, or an independent financial advisor.

The total of 200 respondents shown above excludes 49 who answered "don't know" or who refused to answer. Generally, persons who would otherwise be included but have supplied incomplete or inadequate information on any of the model's variables are excluded. (See earlier footnotes concerning a separate methodology paper comparing this subsample with that of included persons.)

Figure 5.4 is a diagrammatic representation of our theory concerning the pattern of interrelations among predictors of the usage of professional financial advice. The theory hypothesizes that three factors that affect the outcome variable do not affect others in the model. They are nearness of the expected retirement date, worry about one's economic situation in retirement, and the expected variety of sources of retirement income. The influences of the latter two factors are constrained by the existence of savings and investments, household income, education, and participation in a workplace pension or savings plan. However, these are not mutually independent influences, as the pattern of arrows in Fig. 5.4 shows. Sex, age, and race stand behind all these factors as relevant background variables.

On the measures of goodness of fit, the model performs acceptably. For example, the model classifies 86% of the cases correctly. Thus, its performance is 36 percentage points better than that of the null-hypothesis model. Because of the very small

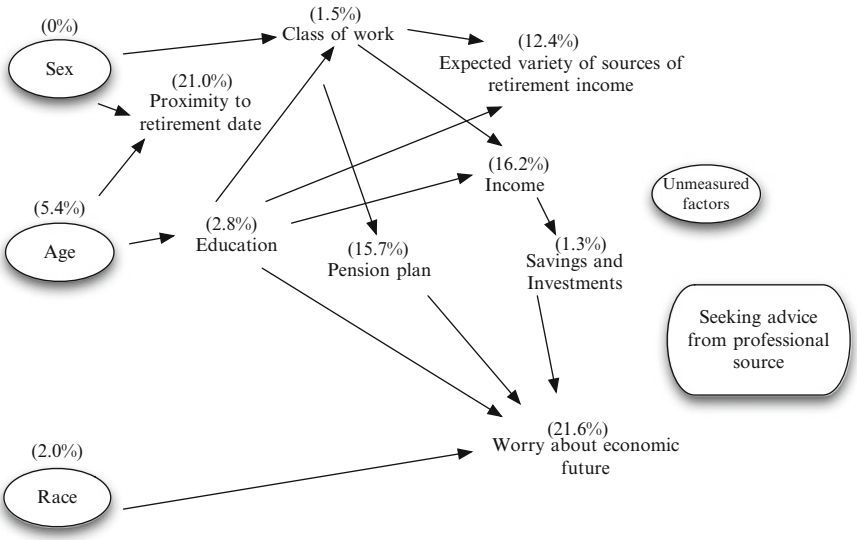

Fig. 5.4 Schematic diagram of the theory concerning causal linkages among predictor variables, with data on the relative importance of the predictors, in the model to predict seeking professional help with financial management (Sample restricted to those who sought help from any source) (Source: 2010 Retirement Confidence Survey of Employee Benefits Research Institute)

sample size and the substantial percentage of missing cases, however, the text below focuses only upon various data patterns that are consistent with findings from other studies and with well-supported theory.

The percentages shown above the names of variables in Fig. 5.4 represent the relative contributions of the variables to the model's goodness of fit. Among the predictors of seeking help from professional financial advisors, the statistically strongest are worry about economic dependency in retirement, nearness of the expected date of retirement, membership in a workplace pension or retirement savings plan, household income, and the expected variety of sources of retirement income. Nearly four-fifths of the model's performance is attributable to worry about financial dependency and proximity to the planned retirement date.

More than 10% of the model's goodness of fit is attributable to the variable named "the expected variety of sources of income in retirement". To measure this variable, the respondent was awarded one point when she reported having one of the following six sources: a workplace pension plan, a workplace retirement savings plan, an individual retirement account, personal savings or other financial capital, employment, or social security. Thus, a respondent could have a maximum of six points. However, in the modelling work, those with three points or less were aggregated to form one category.

Table 5.2 Odds ratios for categories of selected predictor variables in modelling the search for professional advice with financial management, pre-retired Americans aged 45 or more in 2009

Predictor variables		Relative contribution[a]	Odds ratio
Age group		5.4%	
1. 45–54	1 vs. 3		1.8
2. 55–64	2 vs. 3		2.0
3. 65 and over	Ref.[b]		1.0
Variety of retirement income sources		12.4%	
1. Level 1 (lowest)	1 vs. 4		0.4
2. Level 2	2 vs. 4		0.3
3. Level 3	3 vs. 4		0.6
4. Level 4 (highest)	Ref.		1.0
Household income group		18.2%	
1. Below median	1 vs. 2		0.4
2. Median or higher	Ref.		1.0
Having a pension or retirement savings plan		15.7%	
1. No	1 vs. 2		0.2
2. Yes	Ref.		1.0
Proximity to the expected retirement date		21.0%	
1. Less than 5 years	1 vs. 4		8.5
2. 5–9 years	2 vs. 4		2.0
3. 10–14 years	3 vs. 4		1.7
4. 15 years or more	Ref.		1.0
Worry about depending on relatives		21.6%	
1. Little or no worry	1 vs. 2		0.3
2. A lot of worry	Ref.		1.0

Source: 2010 Retirement Confidence Survey of the Employee Benefit Research Institute
[a]Based on the variable's Wald Chi-square. See footnote 1 in Table 5.1
[b]Reference category

Due to the small size, the sampling design, and the substantial percentage of missing cases, the following table with details concerning the patterns of association of selected predictor variables with the outcome needs to be treated with great caution (see Table 5.2). Specific numbers shown in this table should be regarded as having high sampling variability in all cases. What is important to observe here is the pattern of variation in odds ratios among the categories of the key predictors. For the variables shown in this table, this pattern is consistent with the findings of other studies and with the adopted theoretical framework. As the reader will see in the next section, there is substantial coherence between this pattern and that which a much larger sample would show.

Among the patterns shown in Table 5.2, the following seem worthy of note:

- Those with "much worry" were far more likely to have sought professional assistance than those with "little or no worry".
- The probability of seeking professional assistance is much greater among those who are less than 5 years from their expected retirement date than those who are 5–9 years away.

- Those not enrolled in a workplace pension or retirement savings plan have a much lower than the average probability of seeking professional assistance.
- As the variety of retirement income sources increases, so does the probability of seeking professional financial advice.
- When the household income is below the median, the probability of seeking professional financial advice is far below average.

Despite the evident problems with small size, sampling design, and a substantial percentage of missing cases, the EBRI data point to patterns that are consistent with the findings of previous research and are in line with our adopted theoretical framework.

The details in Table 5.2 suggest that unusually high probabilities of seeking professional financial assistance can be found in population segments that combine selected values among the variables it lists. Consider, for example, a population segment comprised of persons with the following combination of attributes:

- A wide variety of sources of retirement income
- Household income above the median
- Membership in a workplace pension or retirement savings plan
- Much worry about economic dependency in retirement
- Being less than 5 years away from their expected retirement date

The population segment with this combination of attributes is expected to have a much higher than the average probability of seeking advice in addressing financial management issues. (This is based on the pattern of odds ratios shown in Table 5.2.) If a large number of persons have this *combination of five attributes,* we suggest that they comprise a *distinctive population segment or a key demographic.*

Attention to key demographics has already been exhibited in the literature concerning help-seeking behaviour in addressing financial management issues. For example, Grable and Joo (2001) found that the following combination of attributes tended to boost the probability of seeking help from professional advisors: being a homeowner in the pre-retirement ages, performing better than the average in financial matters, and having greater than the average risk tolerance along with satisfaction with one's financial situation. In effect, Grable and Joo (2001) were defining a five-dimensional demographic.

If we use only visual inspection of patterns in odds ratios to identify key demographics, we will miss some of the important ones. A much better way involves estimating conditional probabilities of values of the outcome variable by using the estimated parameters of a prediction model. The parameter values allow us to conduct an exhaustive search for combinations of attributes with the high probabilities of a certain outcome. This procedure is illustrated in Chap. 6.

Using the approach just outlined, Tables 5.3 and 5.4 display a sample of key demographics in the utilization of professional financial advice, based on the EBRI data. Table 5.3 presents three selected demographics with very high probabilities of having sought the services of professional advisors in addressing financial

Table 5.3 Selected key demographics with very high probabilities of having sought professional assistance in financial management among pre-retired Americans in 2009

Variable	Population segment 1	Population segment 2	Population segment 3
Age group	45–54	45–54	55–64
Race	White	White	White
Household income	Above the median	Above the median	Above the median
Variety of retirement income sources	Greatly varied	Moderately varied	Moderately varied
Proximity to expected retirement date	At least 15 years	At least 15 years	Less than 5 years

Source: Model parameters based on data from the 2010 Retirement Confidence Survey of the Employee Benefit Research Institute

Table 5.4 Selected key demographics with very low probabilities of having sought professional assistance in financial management among pre-retired Americans in 2009

Variable	Population segment 1	Population segment 2	Population segment 3
Age group	45–54	65 and over	45–54
Race	White	White	Non-white
Household income	Below the median	Below the median	Below the median
Variety of retirement income sources	Lowest variety	Lowest variety	Lowest variety
Proximity to expected retirement date	At least 15 years	At least 15 years	10–14 years

Source: Model parameters based on data from the 2010 Retirement Confidence Survey of the Employee Benefit Research Institute

management issues. In contrast, Table 5.4 displays three demographics with very low probabilities of having sought such services. These are large segments within the US population.

As we saw in the example provided from the work of Grable and Joo (2001), several attributes are used to define these population segments. However, in selecting them, we focus on ones that were strong contributors to the model that predicts the probabilities of the outcome variable. When several predictor variables make strong contributions to the performance of the model, a large and highly varied set of combinations among their values will be associated with an unusually high, or very low, probability of a certain outcome. In this situation, it will be either difficult or very time consuming to successfully enumerate in advance of examining the data which combinations of values among the predictor variables will be associated with high probabilities of a certain outcome. The relevant combinations must often be determined by examining the data generated by the prediction modelling effort.

5.9 Utilization of Professional Financial Advisors, Based on the CFCS

The 2009 CFCS provides an opportunity to continue development of international comparison of main findings in the *multivariate* analysis of usage of professional financial advisors (see Snoke et al. 2010; HSBC 2011 for analyses of other datasets from beyond the USA). The universe for this analysis of the utilization of professional financial advisors, based on the data from the 2009 CFCS, comprises pre-retired persons who reported that they had received financial advice from at least one source.

The outcome variable for this analysis was defined in terms of the respondents' answers to two questions. The first asked whether they had received advice from any source concerning named financial products. The second question asked about the source of the advice. The outcome variable has two categories:

Yes—91.2%
No—8.8%
Total—649

A total of 670 pre-retirement respondents reported that they had sought advice from some source. The lower figure of 649 shown above is the result of having dropped from the sample those who answered "don't know" and those who refused to answer to any of the questions used to define variables in the model. Since these 21 persons are not expected to have any noticeable effect on the results of the estimation process, the issue of missing cases will not be pursued further in this section.

Figure 5.5 presents our outline of the theory that underlies the model. Four factors directly affect no other predictors, while their effects are constrained by other variables in the model. These are the expected variety of sources of retirement income, household income, net-worth ranking, and financial self-assurance. The factors that influence these predictors are financial literacy, education, class of work, occupation, and membership in a defined contribution pension plan. Standing behind all these predictors as relevant background variables are sex, age, mother tongue, reliance on family advice, and immigrant status.

The model's goodness of fit is acceptable. It classifies 7 out of 10 cases accurately, which represents a 20%-point improvement over the accuracy of the null-hypothesis model. Using the measure based on the likelihood ratio chi-square, the adopted model achieves an 18% reduction in the error of prediction of the null-hypothesis model.

Among the measured predictors of seeking help from professional financial advisors, occupation, financial self-assurance, immigrant status, and net worth class are the statistically most important contributors to the goodness of fit of the model. These variables, along with age and the net worth class, are the only predictors with Wald chi-square values of 6 or more—which points to statistical significance at the 15% level or better. (Note that the important variable, proximity to the expected date of retirement, cannot be measured from the CFCS database.)

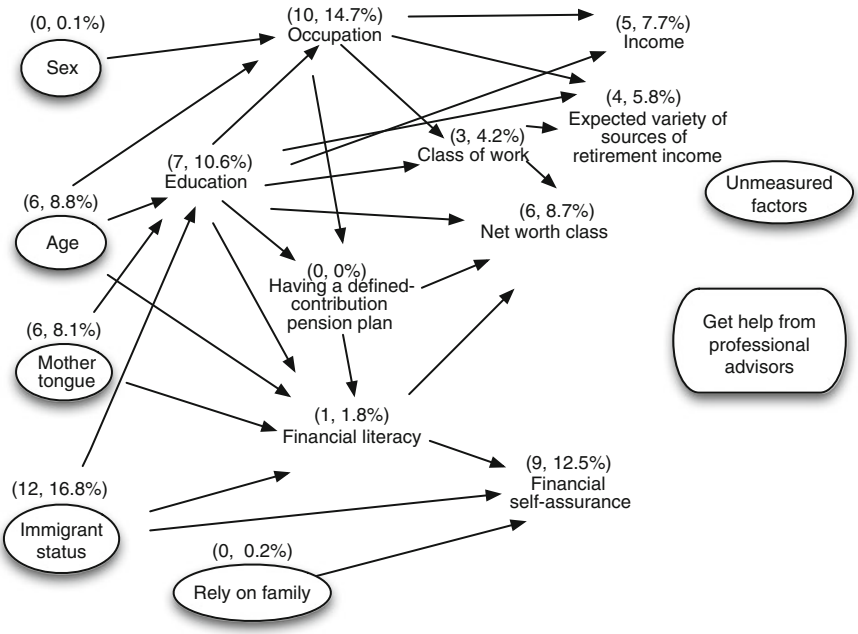

Fig. 5.5 Schematic diagram of the theory concerning causal linkages among predictor variables, with data on the relative importance of the predictors, in the model to predict getting professional advice with financial management, among pre-retired who got some kind of related advice (numbers within parentheses are Wald chi-squares and their percentage contributions to the model's goodness of fit) (Source: Statistics Canada, 2009 Canadian Financial Capability Survey)

The pattern of partial associations between individual categories of occupation and outcome variable seems to point strongly to the importance of access to relevant financial planning information and coaching. The latter is often provided through the employer (see Table 5.5). Much greater than average conditional probabilities of making use of professional financial advice are to be found among the following occupation groups:

- Management occupations
- Business, finance, and administrative occupations
- Occupations in social science, education, government
- Service and religion/occupations in art, culture, recreation, and sport

In contrast, the occupation groups with lower than average probabilities are the following:

- Sales and service occupations
- Trades, transport, and equipment operators and related
- Occupations unique to primary industry
- Occupations unique to processing, manufacturing, and utilities

Table 5.5 Odds ratios for categories of selected predictor variables in modelling to predict receiving professional advice with financial management among those who got some kind of advice, pre-retired Canadians aged 55–69 in 2009

Predictor variables		Wald chi-square[a]	Odds ratio
Immigrant status		12	
1. Canadian born	1 vs. 3		3.4
2. Immigrants before 1985	2 vs. 3		1.1
3 Immigrants since 1985	Ref.[b]		1.0
Mother tongue		6	
1. English	1 vs. 3		0.3
2. French	2 vs. 3		0.3
3. Other	Ref.		1.0
Financial self-assurance		9	
1. Level 0 (lowest)	1 vs. 5		1.6
2. Level 1	2 vs. 5		6.5
3. Level 2	3 vs. 5		2.6
4. Level 3	4 vs. 5		2.6
5. Level 4 (highest)	Ref.		1.0
Occupation		10	
1. Management	1 vs. 6		6.3
2. Business, finance, and administration	2 vs. 6		2.3
3. Natural and applied sciences and related occupations	3 vs. 6		1.6
4. Social science, education, government	4 vs. 6		3.1
5. Sales and services	5 vs. 6		1.0
6. Trades, transport, and equipment operators	Ref.		1.0
Net worth class		6	
0. Level 1 (lowest)	0 vs. 4		0.6
1. Level 2	1 vs. 4		0.3
2. Level 3	2 vs. 4		0.7
3. Level 4	3 vs. 4		1.1
4. Level 5 (highest)	Ref.		1.0

Source: Statistics Canada, 2009 Canadian Financial Capacity Survey, Public Use File

[a] The Wald chi-square values shown here measure what the variable in question would add to the overall likelihood ratio chi-square of the model if the variables were entered into the model in a stepwise fashion and the variable in question was the last one entered

[b] Reference category

Among the levels of financial self-assurance, the conditional probability of receiving financial advice from professional sources is least in the top and bottom classes. (The definition of this variable has been described above.) These results suggest a hypothesis that those with the least self-assurance and those with the most self-assurance share lower than the average conditional probability of having received professional financial assistance (see Table 5.5). If we further hypothesize that those at the top level of self-assurance are likely to be highly educated, there are consistent data in the statistical results. A much lower than the average conditional probability of having received professional financial assistance is found at the highest level of education.

Table 5.6 Selected key demographics with very high probabilities of having received professional assistance in financial management among pre-retired Canadians in 2009

Variable	Population segment 1	Population segment 2	Population segment 3
Gender	Male	Female	Female
Age group	60–64	55–59	55–59
Immigrant status	Canadian born	Immigrant	Canadian born
Mother tongue	English	Neither English nor French	English
Education	Less than post-secondary diploma	Less than post-secondary diploma	Less than post-secondary diploma
Occupation	Managers, finance and administrative	Science, education, government	Sales, services, trades
Net worth class	Low	Low	High
Income sources	Moderate to high variety	Moderate to high variety	Moderate to high variety
Household income group	$32,000–$120,000	More than $120,000	More than $120,000
Self-reliance	Low to moderate	High	Low to moderate

Source: Model parameters based on data from the 2009 Canadian Financial Capacity Survey

Canadian-born persons are far more likely to have received professional advice than immigrants. This divergence was probably accentuated among the youngest of the three age groups considered.

The CFCS is unique among the surveys available for this study in providing enough household asset and debt information to allow the computation of approximate net worth estimates. The variable named "net worth class" listed in Table 5.5 is a ranking. By examining respondents' positions among categories of assets and debts, we arrived at a ranking of net worth categories. For example, those in the top levels of assets and the lowest levels of debts would be placed in the highest net worth class. The odds ratios for the variable named "net worth class" show a systematic pattern. As we move up the ladder of net worth classes, the conditional probability of having received financial advice from a professional source tends to rise.

The details in Table 5.5 suggest that unusually high probabilities of receiving professional financial assistance can be found in population segments that combine selected values among the variables it lists. Consider, for example, younger Canadian-born persons with education below university degree, in the managerial occupations and in the higher net worth ranks. When a substantial number of persons have this *combination of five attributes*, we suggest that they comprise a *distinctive population segment or a key demographic*. In contrast, a very low probability of having received financial advice from a professional source would be found among well-educated immigrant women in the lower net worth classes and in the sales and service occupations. A substantial number of persons with this combination would comprise another *key demographic*. Using this approach, Tables 5.6 and 5.7 illustrate selected key demographics in the utilization of professional financial advice based on the CFCS data.

Table 5.7 Selected key demographics with very low probabilities of having received professional assistance in financial management among pre-retired Canadians in 2009

Variable	Population segment 1	Population segment 2	Population segment 3
Gender	Female	Male	Female
Age group	60–64	60–64	55–59
Immigrant status	Immigrant	Immigrant	Canadian born
Mother tongue	English	Neither English nor French	English
Education	University graduate degree	University undergraduate degree	College or vocational diploma
Occupation	Natural and applied sciences and health	Natural and applied sciences and health	Managers, Finance and Administrative
Net worth class	Low	Low	Low
Income sources	Moderate to high variety	Moderate to high variety	Low variety
Household income group	$32,000–$120,000	$32,000–$120,000	$32,000–$120,000
Self-reliance	High	High	High

Source: Model parameters based on data from the 2009 Canadian Financial Capacity Survey

Ten attributes are used to define the key demographics shown in Tables 5.6 and 5.7. Table 5.6 presents three Canadian demographics with very high probabilities of having received the services of professional financial advisors. In contrast, Table 5.7 displays three demographics with very low probabilities of having received the services of these professionals.

It is important to be aware of the detailed combinations of attributes that lead to large probabilities if one is setting up a marketing or advisory programme or service about financial management questions. It is notable that these large population segments are not highly educated, and their net-worth levels are not uniformly high. Both the variety of income sources and the household income level tend to be in the middle ranges.

The three demographics that illustrate segments with low probabilities of having received professional financial services are notable for all having a high level of self-reliance, higher education, and relatively high knowledge-content professions. Their household income classes are in the middle ranges.

5.10 Implications

This discussion section focuses on the lessons we see in the results of the statistical analyses presented above. Although the text introduced our procedure for identifying key demographics, a further comment on this matter will come in Chap. 6.

5.10.1 A Challenge in the Gender Difference Found

The gender difference in rate of utilization of professional financial advice is slight. Several studies concur on this finding (for a review, see Evans 2009). At the same time, there is a strong consensus among experts that later-life financial risks are much greater for women than for men. Two reasons often cited are the gender difference in pattern of working life and that in longevity.

Given this strong consensus, one would expect a substantially greater attention by older women themselves to the tasks of addressing their greater later-life financial risks. We should also find a greater focus among relevant organizations upon assisting older women to equip themselves for those tasks. If these forces exist, they should produce a systematic tendency towards a higher rate of utilization of professional financial assistance among women. Why does this tendency fail to appear in several studies?

One plausible hypothesis is that the vast majority of the later-life planning and decision-making concerning financial management issues are essentially joint, family-level activities (see Chang 2005). In those activities, not only may the man tend to take the lead, when survey interviewers call, men and women living in these familial settings would tend to give the same response to questions about utilization of professional advisors. (For discussions concerning aspects of financial planning among women, see Berger and Denton 2004; Lusardi 2006.) Nevertheless, the lack of a greater differential in utilization of financial advisors bears further investigation and analysis.

5.10.2 Marketing to High-Net-Worth and High-Education Segments

Our data suggest that at the top levels of education, there is an enhanced probability of very high levels of self-assurance, which will tend to work against the search for professional financial advisors. This result indicates that advisors may find it helpful to focus on clients with much better than the average net worth, savings, and investments, but with more modest levels of education and of financial self-assurance.

It is well known that a very high level of self-assurance in managing one's financial affairs independently often fails to produce successful financial management. This means that a special type of outreach and marketing probe needs to be designed by financial institutions to penetrate further this part of the market. This outreach effort would need to take into account the tendency for levels of trust in professional advisors to be lower than the average at the top levels of education, as well as with the greatest financial self-assurance, according to our modelling of trust using CFCS data.

Marketing to the segments just cited may be especially fruitful when it focuses on those who have a wide variety of the expected sources of income in retirement. Our models indicate that the greater is the variety of expected income sources, the higher are the probabilities of trusting professional advisors and of actually using them.

Another lesson is that the impact of high net worth upon utilization of professional financial advice is dependent upon the concentration of assets among a variety of different classes. The fewer the classes, the less will high net worth tend to exert a positive force on the probability of using professional advice. A key point here is that the assessment of this probability needs to take several factors into account.

5.10.3 What to Do About Those with Low Net Worth and Important Disadvantages

There are evidently special challenges facing those client groups with low education, fewer assets, and low net worth, especially if they belong to disadvantaged linguistic or ethnic groups. Government social safety nets may guarantee that they have an excellent income replacement rate upon retirement; but they are not immune to misfortunes that require a great deal of financial expenditure. In the presence of these misfortunes, their excellent income replacement rates are useless, and they will probably need good knowledge and skill to navigate treacherous "financial rapids". What is the best way to get through to them effectively concerning the need to improve attention to competence in addressing financial issues, especially those who are working in occupational and industrial environments where the flow of relevant information is poor? Who should undertake the service delivery, and who should provide resources so that these disadvantaged client groups can be assisted? (For related discussion, see Joo and Grable 2001).

5.10.4 What to Do with Personality and Social-Psychological Factors in Creating Client Profiles?

Personality and other social-psychological factors are important variables in modelling each of the three outcome variables examined in this chapter. This result of our analyses supports the research in other studies where measures for these factors were available. See the studies of Grable and Joo (2001), Joo and Grable (2001), and Chang (2005). Professional deliverers of retirement planning and financial advice will not be surprised by these findings. However, how to make use of this information for these qualitative variables in advisors' day-to-day work may require some reflection.

One route is to use model parameters similar to those estimated above in order to estimate probabilities that clients belong to particular lifestyle or attitudinal classes.

Using these estimated probabilities will help to make the delivery of advice more helpful to the client and more effective for the service provider. To estimate the probabilities for a client, her position on a set of personality and psychological items would need to be obtained by the advisor.

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Chapter 6
Distinctive Population Segments in Multi-mode Risk Management

Leroy O. Stone

This chapter presents and illustrates a method to identify distinctive population segments in retirement-related risk management. Its focus is the conduct of multiple risk management activities, as measured by a composite indicator. A multivariate prediction model generates the conditional probability of the targeted behavioural outcome. The condition comprises a specified combination of attributes. These represent important causal factors in the outcome. Large multidimensional population segments with unusually high (or low) average probabilities are targeted when applying the method. Such population segments are usually represented by small subsamples in surveys, thus eliminating cross tabulations for estimating the required conditional probabilities. The method illustrated here is ready for application with suitable data sets anywhere in the world. Considering together the contrasting profiles of the high-performing and low-scoring key demographics, we find support for our theoretical position that both high and low potentials to achieve effective retirement-related risk management arise from *networks of variables linked via causal chains* in which no single variable is dominant. The data suggest that efforts to bring assistance to those who are not well positioned in risk management will be confronted with challenging heterogeneity among the relevant distinctive population segments.

6.1 Introduction

A key demographic is a large population segment that is defined by its possession of multiple attributes which, in combination, point to an unusually high or low probability of showing a behaviour pattern of interest. Chapter 5 introduced key

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demographics, and there the behaviour pattern of interest was the usage of professional financial advisors. Usage of financial advisors is one of a large set of possible risk management activities that the pre-retired might do. This chapter focuses on persons' conduct of *multiple* risk management activities, as measured by a composite indicator. What are we contributing with this focus on the concept of "key demographic"?

First, we provide statistical analyses that support the idea that in order to advance explanatory analysis of the patterns of population behaviour in the conduct of risk management activities, researchers need to examine *the joint and interactive effects* of multiple personal and family attributes. It is less useful to focus upon the unique contributions of individual variables.

The second feature of our focus upon distinctive population segments is methodological. The number of attributes needed to define key demographics may be so large that routine statistical cross tabulation is unusable due to small sample sizes. This route is blocked because there is a need to compute a *verifiable* conditional probability of the behavioural outcome of interest.

This book illustrates an alternate route that involves using the parameters of models that predict probabilities. In these models, the predictor variables represent important causal factors in the behaviour pattern of interest. Success in estimating the probabilities by following this route leaves one significant task unresolved. This is the task of estimating the sizes of the multidimensional population segments for which unusual probabilities are estimated. The text below offers a strategy for solving this problem.

It is important to conduct multivariate explanatory analysis of population behaviour in retirement-related risk management. Bivariate analyses are currently dominant (see, e.g. Society of Actuaries 2007, 2011; Helman et al. 2011). In these analyses, the risks are treated separately—each risk is a separate focus of a statistical table and discussion. This work is important, but it is valuable to consider how people are viewing and addressing the *arrays of linked risks* that they face, and how they approach their *related issues of setting priorities and seeking an optimum allocation of their limited risk management resources.*

To carry on the illustrative development of the identification of key demographics in retirement-related risk management, where several risk management activities are considered simultaneously by using a composite indicator, we make use of data from two retirement surveys taken in Canada in 2007. These are the only two surveys both available and suitable for this work. The relevant surveys available to academic researchers usually fail to satisfy the minimum requirements for the analysis that follows.

Among existing surveys, the one that is most suitable for our analysis is the 2009 retirement survey sponsored by the US Society of Actuaries. In 2011 the Society was still issuing publications based on this survey, and we were unable to get access to its microdata file. In addition, the published tables based on this survey suggest that only a few hundred records for employed pre-retirees are on this microdata file. Our effort to locate suitable data sources in other countries produced no such source.

We aim to identify distinctive population segments within two classes of substantial population subgroups. The first comprises those in which there are much greater than average concentrations of persons scoring highly on our composite indicator. This indicator measures the conduct of multiple retirement-related risk management activities. The second class of targeted population subgroups comprises those in which there are high concentrations of much lower than average performance on the indicator. This identification contributes to social science regarding the study of population behaviour linked to risk management. It also has utility in business and government.

The process of identifying key demographics provides one way to gain insight into the factors that need to be *simultaneously* considered when trying to understand the level of retirement-related risk management activity in the pre-retired population. The text below describes important results of our work about the explanatory analysis of the conduct of multiple risk management activities.

The organization of the remainder of this chapter is as follows. First, the text will clarify what we mean by some key terminology used above. This clarification will be followed by a review of the data sources, and an introduction of the composite indicator of retirement-related risk management activities. An outline of the theoretical framework and the methodology for our prediction model precedes the presentation of results of the identification process. The presentation of statistical results deals with both what was found in the explanatory analysis and what were the important key demographics derived from this analysis. The discussion section offers a short commentary about some of the practical implications of the statistical results.

6.2 Key Concepts

Chapter 1 provided a detailed clarification of our definitions of "risk", "risk management", and "retirement-related risk management". For the convenience of the reader, the essential points are stated below.

Risk: In this text, "risk" will most often refer to the *probability of encountering* an identified misfortune or loss. Frequently, "risk" means the misfortune itself. The context of usage determines which of these two meanings you should apply.

Risk management: Risk management is the process of identifying important potential misfortunes (losses or setbacks), assessing their risks (probabilities), and developing strategies to do one or more of the following: (a) avoid exposure to the loss, (b) reduce the probability of encountering the loss, and (c) transfer to (or share with) another party the costs or other consequences should the loss be encountered.

Retirement-related risk management: "Retirement-related risk management" refers to risk management aimed at potential misfortunes or losses whose probabilities rise to much higher than usual levels during life in the Third Age.

6.3 Data Sources

The data sources for this analysis are the 2007 General Social Survey (GSS) of Statistics Canada and the 2007 Retirement Survey of Desjardins Financial Security (DFS). The target population for this analysis comprises pre-retirees aged 45–69 in 2007. A brief technical documentation of these sources follows.

Statistics Canada's 2007 General Social Survey (GSS-21) was a multistage random-sample survey conducted by telephone. The target population of GSS-21comprised all persons 45 years of age and over residing in Canada, excluding residents of Nunavut, Yukon, and Northwest Territories, and full-time residents of institutions. The sample had two components. First, among respondents to the GSS-20 (2006), those who were aged 45 and above during GSS-21 collection were included in the sample. Second, the remaining portion of the sample was selected through a technique called "Random Digit Dialling" (RDD). A survey respondent is selected once contact is made with a sample household. Respondents to GSS-20 were originally selected using RDD techniques. A computer-assisted telephone interviewing (CATI) method was used, and the 23,404 respondents represented a response rate close to 58% (See Statistics Canada 2009).

The 2007 Desjardins Financial Retirement Survey was a computer-assisted telephone survey conducted by Surveys, Opinion Polls and Marketing (SOM) from 24 July to 31 August 2007. Its target population comprised Canadian adults (18 years or older) who could be reached by telephone. The sampling plan involved two-stage random sampling. The first stage comprised proportional stratified selection of households in 13 regions. At the second stage, a respondent aged 18 or older was selected in the household using a computerized method based on age. The initial sample was created using a computerized system which generates phone numbers at random. A total of 1,505 interviews were completed, and this represented a response rate of 22%, after non-responses and refusals.

The weighting system was designed so that weighted distributions over categories of key demographic variables matched those produced by using the latest available census data. The demographic variables involved in setting up the weights were sex, age, and mother tongue. Weighting was done within each region separately—so that at the regional level, the weighted distributions matched those of census data.

With such a low final response rate, the question of possible sampling bias raises its head. However, after computing a variety of comparable weighted distributions in this database and that of the much larger GSS, we found such strong similarity in patterns that we concluded that sampling bias is unlikely to be a source of seriously misleading findings in our study.[1]

Given this complex design, SOM developed and released a look-up table of 95% confidence intervals for percentages. These intervals varied according to the region of Canada and sample size. For the entire sample, the 95% confidence interval for a percentage is ±2.6 percentage points.

[1] This remark assumes that the GSS was not affected by serious sampling bias.

6.4 Developing the Composite Indicator of Retirement Risk Management Activities

As noted earlier, this study is based upon a multi-item indicator of retirement-related risk management activities undertaken by Canadians. The indicator has four levels, and it is based upon two subindexes. One subindex relies upon the questions in the DFS 2007 Retirement Survey, and the other uses questions from the 2007 GSS.

The sample used to develop and present results of analysis is drawn from the GSS. This means that we had to simulate GSS respondents' scores on the DFS-based indicator. An explanation of this procedure follows.

The 2007 Desjardins Financial Retirement Survey questionnaire provided an important complement to that of the GSS.[2] To appreciate this point, consider the pertinent topics for which information is available in the GSS:

- Homeownership and mortgage repayment
- Avoidance of new debts
- Whether there have been contributions to an RRSP (government-aided retirement savings plan)
- Existence of personal savings (beyond RRSPs)
- Possession by self or spouse of an employer-sponsored pension plan and the duration of workplace pension eligibility
- How much the respondent understands government-supported retirement pension and old-age income support programmes
- Whether the respondent gets financial advice from certain sources such as accountants, financial planners, or investment counsellors
- Whether in the last 5 years the respondent has prepared for retirement by reducing work hours, increasing physical activities, developing new leisure activities and hobbies, gathering retirement related information, or becoming involved in volunteer activities
- Whether a lack of intention to retire is due to the respondent not having thought about the matter
- The respondent's involvement in the activities of community, church, social, sports, or political groups

The available items from the DFS Retirement Survey provide direct pointers to risk management activities omitted from the GSS questionnaire. Here are the topics of the questionnaire items used to develop the indicator of retirement-related risk management activities based on the DFS survey:

- Did the respondent assign priority to building up savings, including having a plan to achieve this goal?
- If there is such a plan, was it prepared by a professional advisor?

[2] The authors are deeply grateful to the Desjardins Financial Security authorities who provided access to the microdata files of their 2007 Retirement Survey.

- Has the respondent accumulated savings for use in unexpected emergencies?
- Are health problems in future years a target of the respondent's savings programme?
- Has the respondent purchased insurance to cover major health breakdown, receiving health care at home, or receiving long-duration care at an institution?
- Does the respondent have membership in a group insurance plan at the workplace, or does he or she have coverage provided by the spouse's plan?
- Has the respondent made plans to address the issues that will arise if her or his spouse lived much longer than expected?

Drawing upon these items, we constructed an initial composite indicator. This was submitted to a team of expert raters who reviewed and proposed changes. What we eventually produced was a type of a "consensus of ratings" of the different points within the indicator.[3]

The composite indicator made for use with the DFS data was an intermediate step towards estimation of the positions of GSS respondents regarding their level of retirement-related risk management activities. Ratings of DFS survey respondents on this indicator became the outcome variable of a multivariate prediction model. This model predicted levels on the indicator among DFS pre-retired respondents. The predictor variables of this model were restricted to those for which we could construct equivalent variables within the GSS database.

Based on this restriction, parameter estimates from the modelling with DFS data were used to support a Monte Carlo simulation exercise that predicted DFS-based indicator scores among GSS respondents.[4] To improve the validity of the analysis results for GSS respondents, we brought into the process another multi-item composite indicator that was based *entirely* on GSS questions. This indicator focuses on lifestyle dimensions of retirement preparedness. Thus, at the end of the intermediate steps, there were two sets of relevant indicator scores for GSS respondents. The first was derived from parameter estimates obtained in the analysis of Desjardins Financial Survey data via the simulation procedure mentioned above. The second is the lifestyle-oriented GSS-based indicator. The indicator used for the presentation of data below was defined by integrating information from the two subindexes now introduced. For each of these two indexes, there is a range of four possible levels: low, medium low, medium high, and high.

The integration of information from the two indexes, to form a composite indicator of risk management activity, proceeded as follows. (It might aid understanding if the former two indicators are called "input indicators".) The bottom level, level 1, of the final composite indicator comprises those who were at that level on each of the two input indicators. The top level, level 4, comprises those who were at the top of both indicators. Level 3 comprises all the remaining GSS respondents who were

[3] The SAS code and the associated substantive documentation of item categories are available from the author.

[4] A methodology paper that covers the entire procedure, including the development of the model, and provides detailed supporting tables will be available on the Internet as a free download to purchasers of the book.

at the top of only one of the two input indicators. Level 2 contains those who were at the bottom of only one of the two indicators or who were at an intermediate level on each indicator.

In using this composite indicator, or proxy measure, of risk management activity, we are hypothesizing that people at level 4 are generally doing a much better job of retirement-related risk management than those at level 1. We believe that the indications of relative performance regarding retirement-related risk management are most robust in this analysis when the comparison is being made between level 1 and level 4. By focusing upon contrasts between these two levels, we arrive at findings *about distinctive population segments, the key demographics*, which are robust although the entire process begins with raters' assignment of weights to respondents' replies to selected survey questions.

Two unresolved issues concerning the lists of GSS and DFS questionnaire topics cited above affect the substantive results reported below. The first issue is that there are gaps in the coverage of some key aspects of the potential losses for which retirement-related risk management activity is relevant. Second, the lists have a pro-finance bias because of the high proportion of questions that deal with matters for which effective risk management depends on having a high disposable income. A consequence of these issues is that our substantive results have an illustrative character. It points the way to the improved work that awaits better survey questionnaire items.

6.5 Distribution of the Target Population Over Levels of the Composite Risk Management-Activity Indicator

What is the distribution of the target population (pre-retirees aged 45–69) over the four levels of this composite indicator? Figure 6.1 shows the shape of this distribution. It shows low concentrations at the extremes of the distribution. However, the weight in the two lower quadrants is much greater than that in the two upper quadrants. To see why this distributional shape is reasonable, recall how respondents fell into the two extreme levels. To be in the top (bottom) level a respondent must score highly (poorly) on each of two independent subindexes.

What does Fig. 6.1 tell us about how well pre-retired Canadians are doing in their retirement-related risk management activities? In approaching the answer to this question, it seems helpful to imagine that Fig. 6.1 represented an age distribution. In this case, the question might be the following: "What does this distribution tell you about the overall youth (or alternatively, the overall oldness) of the population?" *To answer this question, you would need to look at a second age distribution that serves as a benchmark.* For example, the age distribution under consideration may have 20% above age 65, whereas the benchmark distribution has 8% above age 65. That difference may support the judgement that the distribution under consideration is that of a relatively "old" population.

Similarly, to tell what Fig. 6.1 indicates about how well Canadians are doing in their retirement-related risk management activities, we need to compare it to a benchmark distribution. However, we cannot answer the question because

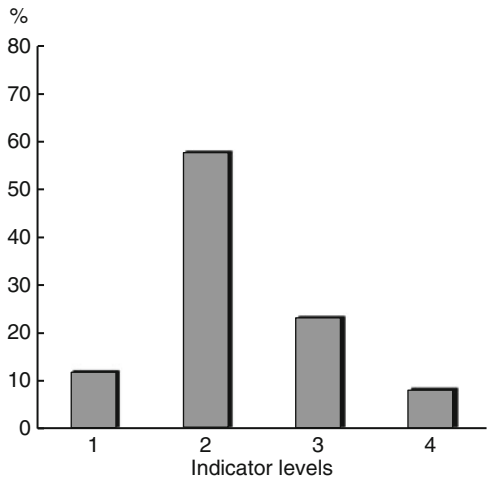

Fig. 6.1 Distribution of the pre-retired population among four levels of the composite retirement-related risk management indicator (this is a composite indicator with rank-ordered levels, based upon GSS respondents' positions on two subindicators, as explained in the text), Canada, 2007 (Persons aged 45–69 who reported that they had never retired) (Sources: Statistics Canada, 2007 General Social Survey, and the 2007 Desjardins Financial Retirement Survey)

the distribution in Fig. 6.1 *is* the *benchmark distribution* for the current study. Our central task is to locate distinctive population segments of substantial size (key demographics) whose distributions over levels of the indicator differ greatly from this benchmark distribution (Fig. 6.1). We will be searching for distributions that have much greater (or much smaller) than average weights in either their upper or lower tails. Thus, we wish to focus upon systematic variations around the shape of the benchmark distribution, which applies to the whole target population.

Key demographics are defined by referring to their combinations of multiple population attributes. Speaking demographically, they are defined in terms of complex population compositions. What attributes will form the dimensions of these complex compositions? *The dimensions are important predictor variables in a model that predicts GSS respondents' positions on the final composite indicator of retirement-related risk management activities*. Focusing on these predictors of the model will greatly enhance the practical usefulness of the results of locating key demographics. Hence, it seems helpful to spend some time expositing the prediction model and indicating the statistically important items among its list of predictor variables.

6.6 Theoretical Framework

Prediction modelling requires analysts to do much more than casually select a list of seemingly relevant variables and throw them all into a regression-type equation without explicit attention to why these variables are pertinent and how their mutual

interrelationships will have a bearing on the assessment of their relative importance. The selection of variables (predictors) needs to rest upon a theory about the nature of the processes that drive the outcome variable (sometimes called "the predictand"). However, it is quite common to select some variables by a process of citing the results of previous research.

The variables that we selected were drawn from a set developed partly on the basis of theory about the processes associated causally[5] with retirement-related risk management activities and partly with the help of findings from related research. The variables initially selected for inclusion in the analysis are:

Sex
Proximity to the expected retirement date
Reported health status
Place of birth
Period of immigration
Region of residence
Educational attainment
Mother tongue
Occupation-by-industry category
Class of worker
Membership in a workplace pension plan

Age is not included here because of its high correlation with proximity to the expected retirement date. Measures of income and wealth are not included because the model is run in three broad household income groups separately (representing low, medium, and high household income).[6]

Elements of a theory concerning the processes that help to determine the extent to which persons would undertake retirement-related risk management activities can be constructed by reviewing relevant bodies of thought within the literature. Here, the word "theory" means a set of propositions concerning how a process works, including the forces that underlie its movements, the pattern and the nature of their influence upon the process, and all definitions of concepts needed to carry on the discussion.

Our theory of the processes that generate risk management activities begins with the axiom that individuals have a certain consciousness of potential pitfalls, losses, or setbacks in the road of life. Some of these persons develop the idea that something can be done to help themselves to cope with the threats posed by these possible losses. Knowledge influences both awareness and the assumption about one's potential for efficacious risk management. This means that early in the process, the

[5] The expression "causal influence" between X and Y means that we *hypothesize* that X has an impact in the real world, by either a direct or an indirect route, on the pattern of variation shown by Y. We set out to see what lessons might be learned by fitting to the data a model that assumes certain kinds of causal dependency among the predictor variables.

[6] There are no questions about wealth in the General Social Survey, except those regarding home ownership and whether the respondent had a workplace pension plan.

depth and breadth of educational sophistication is a key factor. However, these factors are constrained by powerful personality forces.

Aspects of personality may lead the individual to become inattentive to risk management issues in her or his life. Those who are inclined to be attentive will move on to the next step. That step involves acquiring the knowledge and the resources needed to do something about executing risk management activities.

However, even after acquiring the necessary knowledge and resources, there is the issue of competition for their use. Time availability is a good example. A person may fail to take a planned risk management step because he or she has not been able to assign the needed amount of priority to that step given the variety of alternative actions that are competing for the available time.

Time may be only one of a set of relevant resources where this competition becomes a factor. In theory, needed resources may exist and be at the disposal of the individual, but competition for their use causes the individual to assign them to other goals than risk management.

There is another extremely important aspect of resource limitation. We are rarely faced with one potential loss. Instead, there is an array of potential losses, and these losses can be linked so that if one of them occurs, the prospect of having a cascade of linked losses arises. How this array is addressed will depend on available resources and skill in optimizing their allocation among alternative purposes.

Key aspects of our adopted theoretical framework are presented in Fig. 6.2. This diagram identifies some variables which represent the underlying forces that help to set the pattern and level of risk management activity. However, the variables named in Fig. 6.2 are limited by what is available in the GSS database. Age and measures of income and wealth are important, and their omission from the diagram is explained above.

The outcome variable of the model is the one shown at the extreme right of the diagram—multiple risk management activities. Other names in the diagram represent the predictor variables, excepting the name "unmeasured factors". This name refers to relevant factors that are omitted, often because the requisite data are unavailable.

Variables with circles around their names are the exogenous variables of the model. They are not influenced by other predictors. Arrows start from these so-called level 1 variables to indicate others which they influence directly—the level 2 variables. From level 2 variables, there are arrows indicating other variables that they influence—level 3 variables. At the extreme right of the list of predictor variables are those from which no arrows start. They, like all the others, affect the outcome variable.

Here is an illustration of the interpretation of this network of arrows. Participating in a workplace pension plan directly affects one's expected position among retirement-related risk management levels, as it is an indirect pointer to the presence of substantial capital built up in a workplace pension plan. However, it is influenced by the class-of-worker variable (whether one is a paid employee or is self-employed). Class of worker is in turn influenced by the combination of occupation and industry. This combination depends on education. Education, in turn, depends partly upon immigrant status. These and other predictors represent related underlying forces

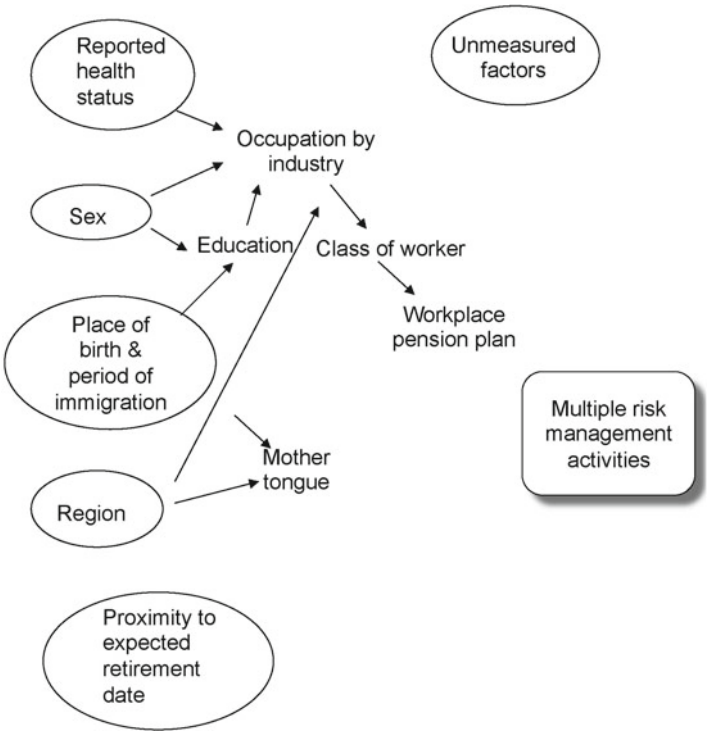

Fig. 6.2 Schematic diagram of the theory concerning causal linkages among predictor variables in the model to predict risk management activity level by the pre-retired within a specific household-income group

such as having some of the types of knowledge that are helpful in promoting risk awareness and interpreting relevant information, having access to that information, and possessing the resources needed to execute risk management activities.

In sum, Fig. 6.2 is a schematic representation of our theory concerning the network of causal influences that flow from the predictor variables to the level of retirement-related risk management undertaken by a GSS respondent. Thus, population subgroups with differing compositions of the predictor variables can be expected to have corresponding differences in their distributions over the levels of risk management activity.

6.7 Method

This section presents a few introductory remarks about aspects of the methodology behind the results presented below. The core of this methodology is a set of practices called "prediction modelling". Among its classic presentations are those of Goodman (1978) and Hilderand et al. (1977).

The universe, or target population, comprises Canadians aged 45–69 in 2007, living in private households, who said they had never retired, and for whom the GSS database presents data concerning occupational and industrial affiliation during the preceding year. Those who are not shown as having such affiliation are not members of the target population. Issues of generalizability and selection bias should be raised regarding this defined universe. The GSS sample representing this universe comprises over 8,000 persons.

Since the outcome variable is categorical with ranked levels, we have used ordinal logistic regression—PROC LOGISTIC with the clogit link in SAS. This version of ordinal logistic regression invokes the proportional odds assumption, which fails from time to time. When it fails, we have resorted to a corrective set of nested binary logistic regression models, using the procedure generally explained in Friendly (1991). A detailed commentary concerning this assumption and the corrective procedure may be found in Stone and Nouroz (2006).

The route we have used to select combinations of predictors that can be expected to be associated with high (or low) levels of risk management activity relies upon the parameter estimates obtained when the model is fitted. First, we ignore variables that seem not to make substantial contributions to the performance of the model, provided there is no theory-based reason for retaining them. Then, among the remaining variables, we identify combinations of values of the predictors that are expected to be strongly associated with high values, or low values as the case may be, of the outcome variable. This expectation is based entirely upon the probability distribution of outcomes that is generated by the parameters of the model. (The search for such combinations stretches across the entire spectrum of the remaining variables.)

Each sample respondent represents a combination of values on the predictor variables. For this combination, the parameter estimates along with the form of the regression equation are sufficient to compute a predicted probability distribution over levels of the outcome variable. To arrive at the key demographics that represent good (or poor) performance on the indicator, we program the computer to select a subpopulation in which all members have an unusually high probability of showing good (or poor) performance. The computer will generate a variety of combinations of values on the predictor variables where the desired probabilities are predicted. Those for which there are substantial populations are the key demographics.

A final point of methodology concerns the importance of considering the hypothesized patterns of association among the predictor variables when estimating parameters of the model. This means, for example, that in estimating the contributions to the model that can be associated with education and occupation, we avoid assuming that these variables are mutually independent. How we proceeded to deal with such an association in our estimation process is explained in a methodology paper that will be placed on the Internet as a free download. This paper will also provide detailed results of the testing of goodness of fit of the model.

Usually, goodness-of-fit tests tend to focus upon the matching of observed and predicted values of the outcome variable on a case-by-case basis. A somewhat less strict test is adequate in demographic analysis where the concern is with variations

among population groups. Our test involves a comparison of two measures of association, the first one being regarded as a benchmark measure. This is the association between the distribution predicted by the null-hypothesis model and the observed distribution. The pertinent distribution is that of the population over the levels of the outcome variable. The second measure of association is that between the distribution predicted by the adopted model and the one actually observed. The greater the divergence between these two measures of association, the better the goodness of fit, provided that the pattern of the divergence makes substantive sense. This approach may be called the "demographic assessment of goodness of fit".

The selected measure for the distributional comparisons is the Pearson contingency coefficient. The benchmark measure is the 0.06 shown for the association between gender and the observed distribution of the population over the levels of the outcome variable. Gender is a very weak performer in the model, from a statistical viewpoint only, and it provides a proxy for the association that the null-hypothesis model would produce. The association between the distribution predicted by the model and the observed one is twice as high as that between the latter and gender. It seems reasonable to conclude that the prediction model has a tolerable level of accuracy, and we can move on to the consideration of key demographics based upon the results of having fitted this model.

6.8 The Important Causal Factors in the Conduct of Retirement Risk Management

Recall that key demographics are large population subgroups defined by using *multiple* attributes. Their distributions over levels of the indicator have unusually large concentrations in or near the highest or the lowest values.[7] We identify key demographics by focusing on the important contributors to the model's level of predictive accuracy. It should be noted, however, that once practical usage is involved, there will be strong interest in including variables that are theoretically relevant though statistically weak in the currently used dataset.

Table 6.1 provides the information we have used to identify these contributors. The variables of the model are listed in the rows, and they are grouped according to the order in which they enter the model. This order is established to take into account hypothesized patterns of association among the predictor variables. For example, education and occupation are not allowed to enter the model at the same time because the former influences the latter.

The rank ordering of the variables according to their contribution to the performance of the model is broadly consistent, though not constant, across all three

[7] The phrase "unusually large concentration" is used for convenience because the model predicts a probability distribution for each respondent. Our process has been to aggregate those who share a relatively (by comparison with the whole sample) high probability for one of the extreme levels of the indicator.

Table 6.1 Relative contributions of predictor variables to goodness of fit of a model that generates probabilities of levels of the retirement-related risk management index, the pre-retired population aged 45–69, by household income group in Canada in 2007

Predictor variable	Degrees of freedom	Wald chi-square[a]		
		Low income	Middle income	High income
Sex	1	1	0	18
Region of residence	4	36	20	13
Birthplace and period of immigration	3	28	19	17
Proximity to expected date of retirement	2	101	75	87
Reported health status	1	110	80	55
Mother tongue	2	11	6	15
Educational attainment	3	118	94	139
Occupation and industry	5	37	11	29
Class of worker	2	4	13	24
Pension plan membership	1	3	0	1
Total		448	318	398
Sample size		3,870	2,961	2,954

Source: Statistics Canada, 2007 General Social Survey, and Desjardins Financial Security, 2007 Retirement Survey

[a] Relative importance is gauged by the rank ordering and size of a variable's Wald chi-square relative to the total shown in the second-to-last line of the table. When the Wald chi-squares are 6 or greater, it is often the case that they are statistically significant at the 15% level or better. This assumes that respondents were drawn into the sample with a known probability

household income groups. The major contributors are reported health status, educational attainment, and proximity to the expected date of retirement. Within each of the income groups, these three variables are responsible for between 70% and 80% of the model's achieved predictive accuracy.[8] Among them, educational attainment is statistically the most important, but the difference between its contribution and that of the second most important predictor is not always substantial.

Other variables with substantial Wald chi-squares across all the income groups include the region of residence, birthplace and period of immigration, mother tongue, and occupation and industry. Class of worker has a substantial Wald chi-square in the middle and upper income groups. Looking across all three income groups, these variables tend to have Wald chi-squares larger than 6.0, which means they are statistically significant at the 15% level or better.

The odds ratios in Table 6.2 display the patterns of association between categories of the important predictor variables and the outcome variable of the model. This information is important for testing the cogency of the model, and the results seem reasonable in the light of our theory and the findings of other researchers.

[8] The analysis has been done within each of three broad income classes because these classes were powerful contributors to the results of the simulation of DFS-based indicator scores among GSS respondents, making a strong direct control of income essential.

Table 6.2 Odds ratios for categories of selected predictor variables in a model that generates cumulative probabilities of levels of the composite retirement-risk-management scale for combinations of values of predictor variables, the pre-retired population aged 45–69, by income group in Canada in 2007

		Low income	Middle income	High income
Predictor variables		Odds ratio[a]		
Proximity to expected retirement date				
1. 0–4 years	1 vs. 3	11.1	6.6	18.6
2. 5–9 years	2 vs. 3	4.3	6.1	5.5
3. 10 years and over	Ref.[b]	1.0	1.0	1.0
Education				
1. No high school diploma	1 vs. 4	0.3	0.5	0.5
2. High school diploma and some post-secondary	2 vs. 4	0.2	0.2	0.3
3. Community college diploma and some university	3 vs. 4	0.0	0.2	0.1
4. University degree	Ref.	1.0	1.0	1.0
Reported health status				
1. Less than very good	1 vs. 2	0.3	0.2	0.3
2. At least very good	Ref.	1.0	1.0	1.0
Mother tongue				
1. English	1 vs. 3	3.7	3.5	1.5
2. French	2 vs. 3	1.7	2.1	1.0
3. Other	Ref.	1.0	1.0	1.0
Occupation and industry				
1. Level 1	1 vs. 6	1.9	0.7	0.2
2. Level 2	2 vs. 6	3.1	0.6	0.2
3. Level 3	3 vs. 6	4.8	1.0	0.4
4. Level 4	4 vs. 6	5.3	1.9	0.5
5. Level 5	5 vs. 6	1.4	1.1	0.3
6. Level 6	Ref.[b]	1.0	1.0	1.0
Birthplace and period of immigration				
1. Born in Canada	1 vs. 4	2.2	2.0	5.9
2. Immigrated before 1975	2 vs. 4	0.5	2.9	6.4
3. Immigrated from 1975 to 1989	3 vs. 4	3.0	1.9	3.6
4. Immigrated since 1990	Ref.	1.0	1.0	1.0
Class of worker				
1. Not a union member	1 vs. 3	0.8	1.0	2.4
2. Self-employed	2 vs. 3	1.3	1.6	4.9
3. Union member	Ref.	1.0	1.0	1.0

Source: Statistics Canada, 2007 General Social Survey, and Desjardins Financial Security, 2007 retirement survey

[a] Use odds ratios to compare the categories of a single variable

[b] Reference category

Highlights of the patterns of association of categories of the predictor variables with the outcome variable are as follows:

- The closer the proximity to the expected date of retirement, the higher the probability of obtaining a high score of the composite indicator of retirement risk management activities. The odds-ratio differentials are so large that they suggest that serious engagement with risk management issues is heavily concentrated in the 5-year period just before the expected date of retirement.
- Having a university degree is the key attribute among levels of education. The probability of being a "top performer" varies little among other categories. However, it leaps upwards for respondents with a university degree.
- Very good or excellent health status is much more likely to be associated with a high score on the indicator than is lesser health status.
- Across the three income groups, the probability of being a high scorer on the indicator falls sharply as we go from English, to French, and then to "Other" mother tongues.
- Below the high-income group, occupation-by-industry levels 3 and 4 tend to have the highest probabilities of being a "top performer" on the composite indicator. These levels tend to include managers or professional and technical workers in high knowledge content industries.
- The self-employed are more likely to score highly on the indicator than are employees.

These findings are broadly consistent with those of Schellenberg and Ostrovsky (2008a), although the issues they address are different, though related, to the ones addressed here.

The odds ratios presented in Table 6.2 are derived from the parameter values estimated in fitting the prediction model that Fig. 6.2 outlines. These parameter estimates are the principal statistical inputs for the identification of key demographics. The estimates indicate that seven predictors made important contributors to the model's goodness of fit. These will be the core variables in defining the multidimensional population segments called "key demographics".

6.9 Some Key Demographics

Recall that key demographics are large population subgroups with unusual distributions over levels of the composite indicator. The distributions are unusual because they have much larger than average concentrations in or near the highest (or the lowest, as the case may be) indicator levels. Those concentrated near the highest level are the main groups in which to search for best practices in multi-mode risk management. Those with unusually large proportions at the bottom level of the indicator are population segments with special needs for assistance.

To identify key demographics, we programmed the computer to generate all possible *combinations* of values for the selected predictor variables and to select

those where the predicted probability of being at the high end of the indicator (or at the low end, as the case may be) is at least twice as large as that for the population as a whole. Because the parameters of the model are the source of the predicted probability distributions, along with the functional form of the model, the search for these "high-probability" combinations does not require reference to members of the survey sample.

This reference is used only to identify the demographics that have large representations in the target population. How this can be done when the sample size is deemed to be too small to support direct estimation is outlined below. We do not need these special procedures in this chapter because the sample sizes are ample. (They are shown in Table 6.1.)

Tables 6.3 and 6.4 show attributes of the largest key demographics according to household income group. Within each income group, Table 6.3 deals with demographics that have relatively high concentrations at the upper end of the retirement-related risk management indicator. Table 6.4 concerns the demographics with relatively high concentrations at the bottom level of the indicator. These tables show only the three largest key demographics of each type. For example, those in Table 6.3 are drawn from a set of 82 high-performing demographics identified by the computer program. (Only the larger ones are called "key demographics" here.) Table 6.4 is taken from a list of nearly 290 demographics with unusually high concentrations near the *low* end of the indicator of retirement-related risk management activities.

To interpret these tables, one reads up and down each column. For example, the column labelled "High income" in Table 6.3 refers to a key demographic defined by eight attributes. They are listed in the first eight rows immediately below the heading. The ninth row gives the size group in which the key demographic falls. Thus, between 10,000 and 15,000 persons in Canada are estimated to have *all* the eight attributes in combination. On average, their predicted probability of being in the class of "top performers" on the composite index of retirement risk management activities is 0.39, which is nearly five times as large as that for the whole target population of pre-retirees aged 45–69. They are men born in Canada with English mother tongue, reported their health status to be very good or excellent, have a university degree, and are within 5 years of their expected retirement date. In addition, they are non-unionized employees in the industry and occupation combination called "level 4". "Level 4" means that their industry group was one of the following: manufacturing, utilities, finance, insurance, real estate, health, or social assistance. Their occupation group was one of the following: management occupations, professional occupations, technologists, or technical.

There is a large degree of homogeneity among the high-performing key demographics. These are a subset of the 82 demographics cited above. Members of this subset tend to have university degrees, report their health status to be at least very good, and be self-employed professionals. While being mainly Canadian-born with English mother tongue, these demographics include a few that are of other mother tongues, as well as immigrants who arrived before 1989. (Table 6.3 shows only the largest one in each of three household income groups. More detailed data are available from the author.)

Table 6.3 Largest demographics with much greater than average concentrations at the top level of the predicted retirement-risk-management index, pre-retirees aged 45–69, by household income group in Canada in 2007

Variable	High income	Middle income	Low income
Sex	Men	Women	Men
Proximity to expected date of retirement	0–5 years	0–5 years	0–5 years
Education	University degree	University degree	At least some university
Reported health status	At least very good	At least very good	At least very good
Mother tongue	English	English	English
Immigrant status	Born in Canada	Born in Canada	Born in Canada
Occupation and industry category	Level 4[a]	n.a.[b]	Levels 1, 3, or 4
Class of worker	Non-unionized employee	Unionized employee	n.a.
Size '000 s	10–15	10–15	5–10
Average probability[c]	0.39	0.22	0.13

Source: Statistics Canada, 2007 General Social Survey, and Desjardins Financial 2007 retirement survey

[a] Occupation by industry levels:
Level 1: Industries = all other industries
Occupations = all other occupations
"All other industries" means industries not listed elsewhere in the classification
"All other occupations" means occupations not listed elsewhere in the classification
Level 2: Industries = manufacturing, utilities, finance, insurance, real estate, health, social assistance
Occupations = all other occupations
Level 3: Industries = all other industries
Occupations = management, professional, technologists, technicians, and technical
Level 4: Industries = manufacturing, utilities, finance, insurance, real estate, health, social assistance
Occupations = management, professional occupations, technologists, technicians, and technical
Level 5: Industries = educational services, public administration
Occupations = all other occupations
Level 6: Industries = educational services, public administration
Occupations = management, professional, technologists, technicians, and technical

[b] "n.a." means that this variable was not used in the computation

[c] Average probability of being at the highest level of the composite indicator (i.e. of being in the class of "top performers"). The benchmark probability for the target population is 0.08

In the high-income population, nearly all the key demographics come from level 4 of the six-level occupation by industry classification. Level 4 comprises the following occupation groups: management occupations, professional occupations, and technologists. All these persons were working in the following industries: manufacturing, utilities, finance, insurance, real estate, health, and social assistance. Also among the high-income key demographics are the occupation industry categories named "Level 3" and "Level 6". As the notes to Table 6.3 show, the occupation groups are the same as those at level 4. The industry grouping for Level 6 comprises educational services and public administration. That for Level 3 is the residual of industry groups not elsewhere classified.

Table 6.4 Largest demographics with much greater than average concentrations at the lowest level of the predicted retirement-risk-management index, pre-retirees aged 45–69, by household income group in Canada in 2007

Variable	High income	Middle income	Low income
Sex	Women	Men	Both sexes
Proximity to expected date of retirement	10 or more years	10 or more years	10 or more years
Education	Less than high school	Less than high school	At most high school diploma
Reported health status	Less than very good	Less than very good	Less than very good
Mother tongue	French	English	English
Immigrant status	Born in Canada	Born in Canada	Born in Canada
Occupation and industry category	Level 1[a]	n.a.[b]	Level 1
Class of worker	Non-unionized employee	Non-unionized employee	n.a.
Size '000s	1–4	5–9	40–50
Average probability[c]	0.21	0.33	0.44

Source: Statistics Canada, 2007 General Social Survey, and Desjardins Financial, 2007 retirement survey

[a] Occupation by industry levels are defined in Table 6.3

[b] "n.a." means that this variable was not used in the computation

[c] Average probability of being at the lowest level of the composite indicator (i.e. of being in the class of "low performers"). The benchmark probability of being a low-performer in the target population is 0.12

It is a reasonable hypothesis that within these combinations of occupation and industry, there exists the heaviest flow of information that raises awareness and provides relevant knowledge concerning retirement-related risk management. At the same time, above-average disposable income allows them to act based upon this enhanced awareness and knowledge. Their high education allows them to understand the planning information. Thus, the driving force behind high-performance is *not* simply a high level of income. Rather it comprises rich exposure to pertinent information and programmes deriving from the employment context, along with higher education to facilitate absorption and use of that information. Higher income serves to facilitate that use. An important implication is that the sharp drop in probabilities seen in going from high income to low income in Table 6.3 is not by any means a "pure" (or unique) income effect. Instead, income is an outcome variable relative to key combinations of others in the model. For example, combinations of education, occupation, health status, and native birth with English mother tongue work together to create an enormous income advantage, from our theoretical perspective.

The high-performing demographics comprise a much more homogeneous set than do the low-performing demographics. For example, all the former demographics found in the computer search mentioned above share the possession of a university degree. In contrast, there is a substantial representation of higher levels of education

among the 290 low-performing demographics. However, those with low education are highly concentrated at the bottom level of the composite indicator of retirement-related risk management activities. Unlike the case of the high-performing key demographics, more than half of these comprise women. Immigrants also have a disproportionately large share in this class of demographics. Table 6.4 shows only the three largest of the low-performing demographics (more details are available from the author).

All three of the largest low-performing key demographics in each income group share Canadian birth, being 10 years or more away from their expected date of retirement, and reporting health status less than very good. They are heavily concentrated in the residual combination of industry and occupation—both industry and occupation not elsewhere classified.

Keeping in mind the concentration of these persons in the residual combination of occupation and industry, it is a reasonable hypothesis that their exposure to awareness-raising information concerning retirement risks is extremely low. Moreover, if the available information presupposes persons with relatively high levels of education, it would probably need to be reformulated in order to be meaningful to those with less than a high school graduation. Thus, there are special *combinations* of attributes which, along with low household income, tend to drive upwards the proportion with low performance on the composite indicator of retirement risk management activities.

In summary, there is marked heterogeneity among the key demographics that have higher than average weights at the bottom of the indicator of retirement-related risk management activity. Nevertheless, they have a dominant tendency to share reported health status less than very good, to be at least 10 years away from the expected date of retirement, and to be non-unionized employees in the residual classes of occupation and industry. Women and immigrants are more heavily represented among them than they are in the total employed population of the retirement age. The most recent immigrants have unusually high concentrations at the bottom end of the indicator of retirement-related risk management activity. (Supporting data are available from the author.)

6.10 Discussion

Considering together the contrasting profiles of the high-scoring and low-scoring key demographics, we find support for our theoretical position that both high and low potentials to achieve effective retirement-related risk management arise from *networks of variables linked via causal chains*. At the end of one class of chains is the creation of enormous advantage, while great handicap is associated with the endpoint of another set of causal chains.

Within these chains no one variable is uniquely dominant. While the evidence concerning dominance points in the direction of the household income variable, we have argued in an earlier section that this is in fact an important outcome of a

convergence of other predictor variables. Efforts to bring assistance to those who are not well positioned will be confronted with challenging heterogeneity in the pertinent distinctive population segments.

Tables 6.3 and 6.4 present only the largest of the demographics that have been identified. Our computer program can be set to examine all possible combinations of values on the predictor variables (regardless of whether any sample member has a particular combination) to see which ones have predicted probability distributions (over levels of the outcome variable) that meet certain criteria. The computer search process can also be designed to select demographics that do not have very high probabilities at any of the extremes of the outcome variable. These methods will assist large organizations to design more effective outreach to population segments.

Methodological innovation in demographic analysis has been a principal purpose of the exposition in this chapter. The methodology illustrated here is robust and is ready for repeated application with suitable data sets anywhere in the world. Once it has been used to identify key demographics, supplemental projects of demographic analysis and forecasting can be employed to address questions about the prospects for growth and regional redistribution among the important multidimensional population segments. This will be valuable demographic work in support of significant programmes in both the public and private sectors.

6.11 Technical Annex: How to Estimate the Size of a Key Demographic in the Target Population

The task of estimating how large the population is in a given key demographic may require significant statistical innovation. This requirement will arise when the subsample represented by a particular combination of attributes is so small that direct estimation (using the weights attached to respondents' records on the relevant microdata file) yields a figure with an unacceptably large 90% confidence interval.

For a large class of practical marketing and planning projects, an order-of-magnitude gauge of size, instead of one number, is good enough. In this class, the pattern of overlap of well-designed approximate 90% confidence intervals may be such that one can readily group key demographics into broad classes according to the order-of-magnitude classification (e.g. thousands of persons, or tens of thousands, or hundreds of thousands).

There is also the possibility that available external sources provide good bases for gauging the sizes of certain key demographics. This text will indicate how they can be used after completing the discussion about the derivation of confidence intervals around point estimates generated from the available sample.

The confidence intervals can be generated in at least two distinct and practical ways. First, where a complex sampling design has been used, the organization responsible for the survey will usually publish look-up tables or formulas to compute confidence intervals around totals and percentages. If the sampling design approximates simple random sampling, the standard formulas for this situation can

be used to compute the 90% confidence intervals using the standard error estimates generated by the available statistics software.

When the assumptions of this software must be rejected, and no look-up tables have been provided by the organization that did the survey, then a kind of rough-and-ready bootstrapping procedure is feasible. Below we outline a very simple one that will always work.

Suppose that we wish an order-of-magnitude estimate of the size of one specific key demographic that is a member of a large class of key demographics. This specific key demographic will be called the "target key demographic" below.

First, starting with the target key demographic, aggregate over members of the said class of key demographics until we arrive at the minimum number that supports estimation of the total population represented by that aggregate. Call the selected members the "superset", and each key demographic within it a "selected subset".

At this point, from the available sample, we can obtain a reliable estimate of the target population represented by the superset. This would be achieved by an appropriate use of the available respondent weights.

Suppose there are 100 key demographics in the superset. Use a Monte Carlo assignment process to allocate all hypothetical members of the target population of the superset (say 500,000 people) over the 100 categories. Each category represents one key demographic within the superset.

Repeat this allocation process 1,000 times. This is quite feasible with today's home computers. It will give us 1,000 distributions of population size over the 100 subsets. From that, we can compute a mean as well as empirical percentage confidence interval estimates based upon the shape of the distribution. This allows us to offer for our target key demographic an expected size, the mean of the said distribution, along with percentage confidence (e.g. 90%) intervals of sizes around the expected size. These confidence intervals would be based upon the virtually bootstrapped 1,000 population-size allocations.

This interval estimate can be valuable if all we need to know is a general order of magnitude for that size, that is to say: Is that size a few thousand, tens of thousands, or hundreds of thousands? Thus, without an external data source, and armed only with the programming required to do the bootstrapping identified above, we can arrive at good guesses of the orders of magnitude of selected key demographics in terms of expected sizes and confidence intervals around those expected sizes.

The accuracy of the order-of-magnitude estimate can be greatly enhanced by using reasonable estimates of the proportions of the superset that apply to the subsets. Suppose that we already have an estimate of the percentage of the superset that lies within each subset, including our target key demographic. Can we trust it? If we can, then use it to get a refined application of the Monte Carlo assignment process—it is then driven by a plausible probability distribution. If we cannot trust it, we may use it to devise an alternate and more defensible percentage distribution (perhaps by aggregating some members of the subset). However, if all else fails, we would use a flat probability distribution, recognizing that this is a less desirable last resort. Thus, by driving the Monte Carlo assignment with the help of a plausible probability

distribution of the subsets, we can get a good expected value of size for our target key demographic, along with its associated 90% confidence interval.

For some key demographics external data sources, such as a census microdata file, can be used to get useful estimates of both size and geographic distribution. Professionals developing identifications of key demographics for marketing or policy purposes may find it helpful to limit the defining attributes to ones that are readily found directly (or by means of stochastic imputation) within huge microdata files such as that from a recent census.

In summary, either through external data sources (such as a census microdata file) or by alternative confidence-interval estimation procedures as outlined above, reasonable orders-of-magnitude estimates of population size can be obtained for the key demographics that are important for your work.

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Chapter 7
Gender Differences in Preparedness to Meet Retirement's Challenges

Leroy O. Stone and Brigitte Neumann

This analysis of gender differences in preparedness to meet retirement's challenges uses data derived primarily from Statistics Canada's 2007 General Social Survey (GSS). We also present results of our analysis of data from the 2008 Health and Retirement Survey of the University of Michigan. We construct two composite indicators, with the help of a team of experts. At the highest of five levels of the indicator for Canada, the percentage for men is significantly greater than that for women. We use multivariate analysis to examine whether this differential is due to variance in population composition between pre-retired men and women. After holding constant several relevant factors, we found that the concentration of pre-retired men in the highest level of the indicator was 10% greater than that for their female counterparts. Pronounced gender differences exist within important population segments. Women tend to have markedly greater concentrations than men in the lowest quintile of the indicator among widows and widowers. Among both the university educated and those without a high school diploma, men have much larger percentages in the top levels of the indicator. A sharp difference favoring men also exists among married immigrants.

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7.1 Introduction

Gender differences have been slight in the statistical analyses done for the earlier chapters. Chapter 5 found that the gender difference in rate of utilization of professional financial advice was slight, and several studies concur in this finding. In Chap. 6, sex was one of the predictors in all the models, but only in the high-income population was its contribution to the model statistically significant at the 10% level or better. Here it made the fourth largest contribution to the model's performance among ten predictor variables, and men were more likely than women (odds ratio close to 1.5) to have a *low* score on the composite indicator of risk management activities. In both the low- and middle-income subpopulations, the odds ratio for men (relative to women) was very close to 1.0, and the Wald chi-square for sex was negligible. Since the sample sizes exceeded 2,000 in each case, it can be said that in these two populations, the gender difference was negligible.

Yet there are at least two reasons to pursue our study of gender differences. First, low variance in this variable may cause its statistical effects to be swamped by the variances in many other predictors that are also important to the outcome being analyzed. As a result, even when the direction of the gender difference is stable, its relative statistical strength may be weak. Nevertheless, gender should be retained in statistical models if the underlying sociocultural reality is one where there is strongly gendered structuring of life courses and access to work opportunity.

A second reason why we need to pursue gender studies in retirement derives from the strong consensus among experts that later-life financial risks are much greater for women than for men. Important gender differences in nonfinancial risks should also be noted. For example, the longevity differential leaves women far more exposed than men to important misfortunes regarding both functional capacity and social support quality.

There may be large and important gender differences among key population subgroups. This is a third reason for doing this study. If in these groups women seem systematically less well prepared than men, there would be good grounds for deepening analysis toward exploring useful explanatory hypotheses.

Thus, the statistical indication of slight differences between men and women in risk management activities and retirement preparedness are cause for concern among all stakeholders. Facing the perils of later life, women would be markedly better than men in preparedness if this were an ideal world.

Many studies in the USA are focused upon the gender dimension of retirement preparedness, providing important elaboration on the special risks women face arising from their greater longevity and the gendered structures of work opportunity and family caring obligations over the life course. As early as 2006, Rappaport called for a change in policymakers' tendency to be inattentive to the special resource deficiencies among female baby boomers (Rappaport 2006). More recently, the Society of Actuaries has published a study of retirement risks among women (Society of Actuaries 2010). Other research centers in the USA have published reports on the special issues faced by aging women (see, e.g., Papke et al. 2008;

Larou 2009; ERISA Advisory Council 2010; The Women's Institute for a Secure Retirement 2009; Johnson 2011).

A feature of this research is its heavy focus on women's financial security in retirement. However, many retirement planners and coaches, as well as those who have already entered the Third Age and watched their extended family members grapple with the consequences of their losses, will agree with a position taken by the International Federation for Retirement Education (InFRE). InFRE, which publishes the "InFRE Retirement Readiness Index," has argued that retirement preparedness involves dimensions beyond that of finance (International Federation for Retirement Education 2011). For related discussion, see McDonald (2006), Townson (2006), Chicago Bar Association, and the Women's Bar Association of Illinois (2007).

Financial security in retirement and dealing with the financial side of longevity risk are topics of central importance in retirement-related risk management. However, a broader perspective in studying women's preparedness for retirement is helpful. In this chapter, we probe gender differences in some major aspects of preparedness to meet retirement's challenges. Our analysis uses a composite indicator of preparedness to meet retirement's challenges.

7.2 Developing the Survey-Based Composite Indicator of Preparedness

A variety of approaches have been made to measure retirement preparedness. In 2011, there is no consensus on what is the best approach. With the hindsight of the financial crisis, we can now see that a crystal ball is needed to foretell the future value of any existing stock of wealth whose value is based on market prices. Adding to this the uncertain future earnings of working lives not yet completed, it is easy to see that several tenuous assumptions are needed to base an index of retirement readiness upon measures of wealth holdings (including entitlement to workplace pension income).

Inevitably, then, analysts should accept a variety of approaches to measuring retirement readiness, each one having its particular set of focuses, data sources, and assumptions. They are all legitimate, if we bear in mind that this multidimensional domain needs to be observed from very different angles, and nothing we conclude from one angle is necessarily informative about other dimensions in the domain.

This chapter uses a composite indicator based on questions in Statistics Canada's 2007 Canadian GSS. The 2007 GSS had a major focus on aspects of respondents' knowledge and efforts in planning for retirement. Because our indicator is based upon GSS respondents' replies to survey questions, it seems useful to characterize it as a composite indicator focused on subjective and behavioral aspects of preparedness for retirement. Thus, the GSS supports a portrait of selected aspects of preparedness.

It seems helpful to place the GSS questionnaire topics within the context of Chap. 3's survey of dimensions of preparedness. Chapter 3 discussed the following dimensions:

- Financial preparedness
- Mental preparedness (e.g., reorientation of self-identity)
- Health-status preparedness, including functional capacity
- Lifestyle preparedness
- Risk management
- Social connectedness

These are not mutually exclusive dimensions. For example, risk management arises in a number of the other areas, such as financial preparedness and social connectedness.

Knowledge, attitudes and expectations, resources, and behavior are areas of observation that are pertinent to most of these dimensions. For example, financial preparedness includes the following:

- Financial literacy and knowledge about the attributes and accessibility of different sources of retirement income
- Strength of motivation to pursue the necessary learning and actions required to build a proper financial foundation for life in retirement
- Capital adequacy and other private savings, property, and pension wealth
- Whether one has sought well-qualified professional advice and has built a plan for accumulating capital on the basis of which retirement income will be delivered
- Risk management relative to capital preservation in the face of threats arising from inflation, market-price volatility, and longevity

Ideally, a survey-based indicator of preparedness to meet the challenges that retirement might bring would cover all the dimensions cited above and carefully take into account major components of complex domains such as that of financial preparedness. The GSS provides only partial coverage of these dimensions. Technical documentation concerning this GSS has been presented in Chap. 6. A brief introduction to our composite indicator follows.

In designing this indicator, we envisaged two broad classes of preparedness dimensions. One class deals with financial issues and the other deals with lifestyle matters. Regarding financial issues, we defined a composite indicator of *self-reported* financial preparedness. Each questionnaire item chosen for this indicator is hypothesized to represent a condition that affects the survey respondent's *self-reported* preparedness in terms of the respondent's confidence about future income adequacy and savings plans and activities. Next we defined a "lifestyle preparedness indicator." This incorporates multiple domains of plans and activities that are preparatory for life in retirement. These domains involve challenges that lie outside of the realm of income adequacy or financial capacity.

The final composite indicator of preparedness involves an accumulation of rating points across all the just-cited domains. Thus, there is no special weighting for the

self-reported financial preparedness indicator or that which focuses on lifestyle matters. Each GSS question chosen for use was regarded as having importance in its own right as an aspect of preparedness.

However, in the end the points accumulated by a respondent, her or his overall score on the indicator, served primarily to establish a ranking of that respondent within the set of all respondents. Adopting this approach, members of a team of expert raters reviewed and proposed changes to an initial assignment of weights to individual GSS questionnaire items. The final list of assigned points is a kind of "consensus list" among the raters.

With our focus on ranking respondents, instead of on deriving a measure whose absolute value has a particular meaning, we sought to compute the shape of the distribution of respondents over broad groupings of the possible scale scores. The broad groupings are seen as representing ranges of high, medium, and low scores. The questions that one pursues with this type of distribution pertain to *comparisons of subgroups of the population*, in terms of the relative weightings of their distributions in particular segments of the groupings. There is no implied assessment, therefore, of the overall performance of the population. A vehicle for making intergroup comparisons is thus our entire focus.

Remaining within the constraints of what is available on the GSS questionnaire, the self-reported financial preparedness component contains both subjective and objective items. The relevant questionnaire topics are listed below. In some cases, what is shown as a single item depends on the respondent's responses to two or more questions:

- Whether the respondent feels that her or his future income will be adequate to maintain the desired standard of living during retirement
- Household income
- Homeownership and mortgage repayment
- Avoidance of new debts
- Whether there have been contributions to a Registered Retirement Savings Plan (RRSP) and the level of the existing RRSP capital
- Existence of personal savings (beyond RRSPs)
- Possession by self or spouse of an employer-sponsored pension plan and the duration of workplace pension eligibility
- Whether the respondent has made investments in the past 5 years

Proximity to the expected date of retirement was used to determine the weight that is assigned to some of the items. The detailed procedure in the assignment of points is available from the authors and will be placed on the Internet as a free download.

Turning to the lifestyle component, it is worthy of note that its preparation has been informed by our study of a large body of retirement planning literature that deals with various aspects of preparedness for successful retirement. Drawing upon the lessons learned in the literature, a selection was made from among relevant knowledge and activity items in the GSS questionnaire. These items are shown

below. In some cases, what is shown as a single item depends on the respondent's responses to two or more questions:

- How much the respondent understands public retirement programs such as Canada/Québec Pension Plan or Old Age Security
- Whether the respondent gets financial advice from certain sources such as accountants, financial planners, or investment counselors
- Whether a lack of intention to retire is due to the respondent not having thought about the matter
- Whether in the last 5 years the respondent has prepared for retirement by reducing work hours, increasing physical activities, developing new leisure activities and hobbies, gathering retirement-related information, or becoming involved in volunteer activities
- The degrees of the respondent's involvement in community, church, social, sports, or political group activities (which serves as an indirect pointer to the level of social isolation—widely regarded as being very important to quality of life in the Third Age)

7.3 General Pattern of the Distribution of the Population over Levels of the Preparedness Indicator

Figure 7.1 provides an illustration of the shapes of the distributions of the female and male populations over the range of the index (from 0 to 100) when the range is split into ten equal parts. The population comprises GSS respondents aged 45–69 who said they had never retired. These data, like all others that follow, are weighted sample estimates.

Figure 7.1 illustrates the distributions of women and men over levels of the indicator and does so in two age groups: 45–69 and 60–69. In each of the two graphs, differences between women and men are quite modest. While men do slightly predominate in the higher indicator categories, from 7 through 10, women predominate in the midrange categories 4 and 5, and there are no noticeable differences between women and men at the lowest levels of preparedness. The literature emphasizes that the gender differences of concern here become increasingly evident as advanced age is approached. A comparison of the graphs for the two age ranges provides slight support for this idea.

Instead of dividing the range of the indicator into ten equal parts, it seems more useful to identify key thresholds, such as quintiles of the distribution for both sexes. When this is done, men have a higher concentration than women in the two highest quintiles. At the topmost level, the percentage for men is 6% points ahead of that for women (24% versus 18%).

Whether the gender differential just outlined is simply a function of compositional differences between men and women is a question that deserves further pursuit. Could a gender difference in educational composition be a key factor here,

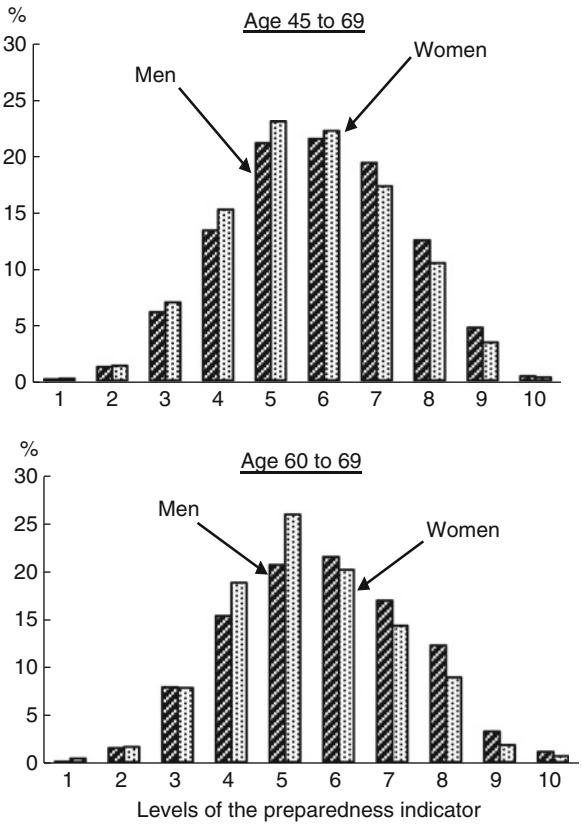

Fig. 7.1 Distribution of the population among ten equidistant levels of the retirement preparedness indicator, by sex, in Canada in 2007 (persons aged 45–69 who reported that they had never retired) (Source: Statistics Canada, 2007 General Social Survey)

since we have found that those with university degrees have a much higher concentration at the upper levels of the indicator compared to those that have less education? (See Fig. 7.2 for an illustration of the association of education to retirement preparedness in the total population of pre-retirees.)

We have also noted that being married is associated with higher scores on the indicator compared to other marital statuses. For example, 25% of married pre-retirees were at the topmost rank of the five-level indicator, while 13% of the other marital statuses were in that category. Could the gender differential in distribution over the indicator scores be simply a question of compositional differences between men and women, such as the differences that pertain to education and marital status? We pursue this question by examining how the distributions of men and women differ within selected categories of education and marital status. The results are shown in Tables 7.1 and 7.2.

At the lowest level of educational attainment, no high school diploma, we find that women have a much higher percentage in the lowest quintile (46% versus

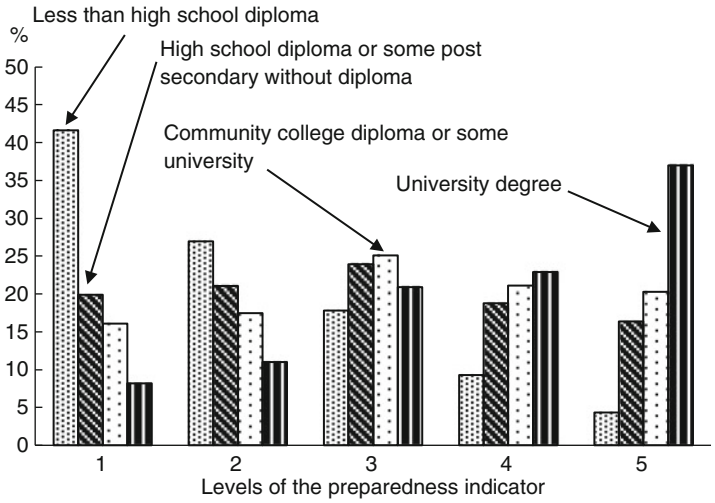

Fig. 7.2 Distributions of educational groups among levels of the retirement preparedness indicator among persons aged 45–69 who reported that they had never retired, Canada, 2007 (the boundaries between levels demarcate quintiles in the distribution of indicator scores when the entire sample is used in the computation). (Source: Statistics Canada, 2007 General Social Survey)

37% for men).[1] About equal proportions of women and men without high school diplomas are in the second and third quintiles of the indicator. Gender differences are small between men and women with high school diplomas but no further education. Similarly, among those with community college diplomas, we see a small difference between men and women in the lowest quintile (15% of men; 17% of women). However, the difference is somewhat larger in the highest quintile.

The gender difference widens further when we consider university-educated men and women. While 40% of university-educated men are in the top quintile, only 33% of university-educated women fall into that quintile. At the opposite end of the indicator, however, the gender difference is not as sharp. Thus, at the two extremes of educational attainment, men have a markedly greater concentration than women in the top levels of the indicator. At the middle levels of education (high school diploma and community college), there is no marked gender difference in distribution over levels of the indicator.

Turning to the question of how the distributions of men and women differ within specific categories of marital status, the most notable difference is found among the married. In this population, 50% of married men, compared to 42% of married

[1] Keep in mind that the boundaries that separate quintiles were established by making computations for the population that comprises both men and women.

Table 7.1 Pattern of gender differences in distributions of educational groups among levels of the retirement preparedness indicator in Canada in 2007

Indicator levels[a]	Female %	Male %
Less than high school diploma		
Level 1	46.3	37.1
Level 2	27.8	26.2
Level 3	16.7	18.9
Level 4	7.5	11.0
Level 5	1.8	6.8
High school diploma or some postsecondary without diploma		
Level 1	21.1	18.5
Level 2	21.6	20.4
Level 3	24.0	23.8
Level 4	18.0	19.7
Level 5	15.4	17.6
Community college diploma		
Level 1	17.1	15.0
Level 2	18.8	16.1
Level 3	26.0	24.1
Level 4	20.1	22.2
Level 5	18.1	22.7
University degree		
Level 1	7.8	8.6
Level 2	12.2	10.0
Level 3	24.4	18.1
Level 4	22.8	23.0
Level 5	32.9	40.4

Source: Statistics Canada, 2007 General Social Survey

[a]The boundaries between levels demarcate quintiles in the distribution of indicator scores when the entire sample is used in the computation

women, fall into the two highest preparedness quintiles. The same direction of difference, but less sharp in degree, is seen among the widowed and the separated and divorced—men are more heavily concentrated at the top levels of the indicator. More than 50% of widows, compared to just below 40% of widowers, fall into the bottom two quintiles of the indicator. It is among the never married where the difference is both slight in degree and unclear in direction.

Thus, women tend to have greater concentrations than men in the lower levels of the composite indicator when we look at those with low education, and at the widows and widowers. Looking within the university-educated and the married populations, men are more likely to have high scores on the indicator. Consequently, the composition of the population on other demographic variables comprises a factor in the pattern of gender differentials shown by the pre-retired population as a whole.

Table 7.2 Pattern of gender differences in distributions of marital status groups among levels of the retirement preparedness indicator in Canada in 2007

Indicator levels[a]	Female %	Male %
Never married		
Level 1	28.9	29.8
Level 2	18.3	21.0
Level 3	23.8	20.6
Level 4	18.0	14.6
Level 5	10.9	14.0
Widowed		
Level 1	29.8	22.6
Level 2	22.5	16.2
Level 3	22.9	21.0
Level 4	12.0	22.1
Level 5	12.7	18.2
Separated or divorced		
Level 1	32.1	27.3
Level 2	22.9	21.5
Level 3	20.6	22.4
Level 4	13.5	15.1
Level 5	11.0	13.7
Married not separated		
Level 1	15.5	13.6
Level 2	18.7	15.6
Level 3	24.2	21.3
Level 4	19.8	21.7
Level 5	21.8	27.8

Source: Statistics Canada, 2007 General Social Survey

[a]The boundaries between levels demarcate quintiles in the distribution of indicator scores when the entire sample is used in the computation

7.4 Pattern of the Gender Differences After Holding Constant Several Other Factors

In considering whether compositional differences between men and women are sufficient to explain the gender differences reported above, we need to go beyond the kinds of bivariate association that have been considered above about education and marital status. To do this, we will develop and apply a multivariate prediction model, where the indicator score is the outcome variable, and there are several predictor variables including sex. The question will be whether the pattern already shown concerning the difference between men and women is retained when a large set of relevant predictor variables is held constant statistically.

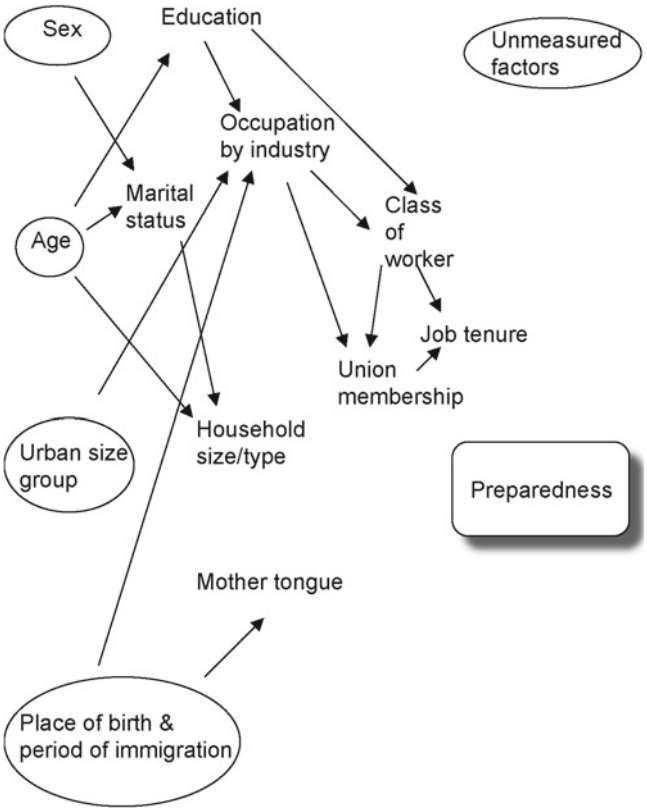

Fig. 7.3 Schematic diagram of the theory concerning causal linkages among predictor variables in the model to predict preparedness index level

7.4.1 Theoretical Framework

A theoretical framework is helpful both for the selection of predictor variables as well as for the development of expectations concerning patterns of association between these and the outcome variable. Elements of a theory concerning the processes that help to determine a person's level of preparedness can be constructed by reviewing relevant bodies of thought within the literature. Some main points of this literature have been summarized in Chap. 3.

Figure 7.3 identifies some variables that represent the underlying forces that help to determine preparedness. These forces involve *attitudes and expectations, knowledge, behavior or practices, and resources.* However, the variables named in Fig. 7.3 are limited by what is available in the GSS database.

Some variables directly measure the availability of *resources*, or they promote that availability. Examples, among the variables listed in Fig. 7.3, are certain

categories of education, occupation, union membership, and job tenure.[2] A person who is in certain categories of these variables has a better than the average probability of being in an improved position, compared to most others at a similar stage of the life course and thus has enhanced preparedness.

There are several kinds of *knowledge* that are helpful in promoting preparedness. The literature has a great emphasis on knowledge pertaining to financial matters, but there are other important kinds of knowledge that promote preparedness. Certain categories of some variables serve to facilitate the acquisition of that knowledge. Among the variables named in Fig. 7.3, the relevant ones are education, occupation by industry, mother tongue, place of birth, and urban–rural residence.

Having a social support network and living in a community where one feels comfortable to pursue social connectedness with persons who are initially strangers tend to increase this motivation. Among the variables listed in Fig. 7.3, marital status, household size, and type ("type" here refers to the type of familial setting within which one lives) are pertinent in this connection. They serve as indirect indicators of the presence of relevant social support forces. Even the variables such as place of birth and period of immigration may contain such pointers to social support, but they will be more indirect.

Figure 7.3 is a schematic representation of our theory concerning the network of causal influences that flow among the predictor variables. All the latter influence the value of the outcome variable—the composite retirement preparedness indicator. Thus, population subgroups with differing compositions on the predictor variables can be expected to have corresponding differences in their distributions over levels of the indicator.

The outcome variable of the model is shown at the extreme right of the diagram. Other names in the diagram represent the predictor variables, with the exception of the name "Unmeasured factors." Unmeasured factors are relevant but are omitted, often because the needed data are unavailable.

Variables with circles around their names are those not influenced by others in the model. Arrows start from them, and they are called "level 1 variables." These arrows point to others they influence directly—the level 2 variables. For example, see the arrow that goes from age to education. Arrows which begin at level 2 variables point to factors that they influence—level 3 variables. Closest to the outcome variable are predictor variables from which no arrows start. However, like all the others, they affect the outcome variable.

7.4.2 Method

This section presents a few introductory remarks about aspects of the methodology in this analysis.

[2]The reader will wonder why variables such as income and capital accumulation are not listed here as prime examples. They are not listed because they comprise dimensions of the preparedness indicator.

The universe, or target population, comprises Canadians aged 45–69 in 2007, living in private households, who said they had never retired, and for whom the GSS database presents data concerning occupational and industrial affiliation during the preceding year.

Since the outcome variable, named "PrepScore," is a discrete interval-level variable with a very large number of possible values ranging from 0 to 100, we have used one of the class of generalized linear models fitted by the GENMOD procedure of SAS. In addition, to make certain tests, we grouped the levels of PrepScore into broad categories and used ordinal logistic regression (PROC LOGISTIC with the clogit link in SAS).

7.4.3 Results

The correlation between the observed values of PrepScore and those predicted by the model is 0.6. Using the Pearson product–moment coefficient (the Spearman being a rank correlation), this means an R-squared of 0.36. This figure lies within the range of the higher values of R-squared to be found in journal articles that report modeling of interindividual variation, which is the type of variation being analyzed here. It is reasonable to suggest that this model has a good fit. (Supporting data are available from the authors.)

Table 7.3 shows the patterns of marginal effects attributable to individual categories within each of the variables. Keep in mind that these numbers are meaningful only within each variable—they must not be compared across variables. The question is whether the pattern of the gender differentials reported above has been reversed or has disappeared, within the context of the multivariate analysis. The answer is no.

There is a marginal effect of 4.2 indicator points favoring men—the respective values being 48.5 for men and 44.3 for women. The figure of 48.5 means that when we hold constant the other variables at their modal values, the model predicts an indicator score 48.5 for men, where 100 is the maximum score. Thus, the predicted value for men is 10% higher than that for women.

These results are being dominated by the financial readiness component of the composite indicator. This was demonstrated by fitting a model in which the outcome variable was the lifestyle subindex instead of the overall indicator. In this model, the marginal effect for men relative to women falls to 1.0 (one-quarter of that shown above).

The gender differential for the lifestyle subindex may disappear because the subindex does not include a factor that is highly significant for women, namely, involvement in caregiving. While social support is important for maintaining good health and well-being in the broadest sense, social support has a downside, so to speak, as social obligation which can become highly burdensome when caregiving is intensive and of long duration.

Townson (2006) and McDonald (2006) address this issue. McDonald (2006) reported a tendency for pre-retired women to understate their exposure to the risk of

Table 7.3 Marginal effects of categories of selected predictor variables in a model that generates predicted values of the overall preparedness indicator for specified combinations of values of predictor variables, unretired Canadians aged 45–69 in 2007[a]

Predictor variables	Predicted indicator score	Marginal effects[b]	Wald chi-square[c]
Sex			
Men	48.5	4.2	47
Women	44.3	Ref.[d]	Ref.
Marital status			
Married not separated	44.3	7.6	17
Never married	36.6	0.0	15
Separated or divorced	36.8	0.2	14
Widowed	36.6	Ref.	Ref.
Immigrant status			
Canadian born	44.3	24.6	335
Immigrated before 1975	39.2	19.6	70
Immigrated 1975–1989	43.7	24.0	199
Immigrated since 1990	19.6	Ref.	Ref.
Educational attainment			
Less than high school diploma	33.6	–40.2	1133
High school diploma	42.2	–31.6	476
Some postsecondary without diploma	44.3	–29.6	326
Community college diploma	51.5	–22.3	16
University degree	73.8	Ref.	Ref.
Job tenure			
Less than 10 years	35.3	–8.9	448
10–19 years	44.3	Ref.	Ref.
20 or more years	46.8	2.5	185
Mother tongue[e]			
English	44.3	9.1	102
French	43.1	8.0	43
Other	35.1	Ref.	Ref.

Source: Statistics Canada, 2007 General Social Survey

[a]Includes only those for whom the GSS provided data for all three of occupation, industry, and class of worker

[b]The marginal effect of category i is equal to predicted score for category i minus predicted score for the reference category. A positive offset means that the category tends to raise the level of the score relative to the reference category. For example, men tend to have a higher scale value than women. When computing the effects for a given variable, the categories of all other variables are held constant at their modal or median values

[c]Wald chi-square values of 6.0 or more are statistically significant at the 15% level or better

[d]Reference category

[e]Language first learned and still understood

being called upon to be a caregiver in later life. In the context of a survey on preparedness for retirement, the relevant questions would prove women's knowledge about this exposure and the efforts they have made to harness the social support that they might need as caregivers (for related discussion, see Zimmerman 2009).

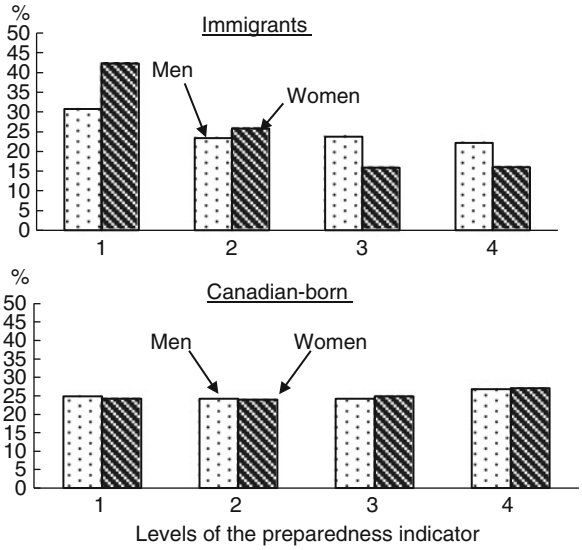

Fig. 7.4 Distributions of men and women among predicted levels of the retirement preparedness indicator among married persons aged 45–69 who reported that they had never retired, by immigrant status, Canada, 2007 (Source: Statistics Canada, 2007 General Social Survey)

7.4.4 The Special Situation of Immigrant Women

The results of the modeling effort allow us to hold constant several relevant factors while focusing upon gender differentials in the composite index of retirement preparedness within an important population segment. Immigrants are of special concern here because they tend to have larger than average proportions at the lower levels of the risk management indicator (discussed in the preceding chapter). Among the key demographics with relatively poor performance on the indicator was one containing well-educated immigrants.

To pursue a focus on immigrants using results of the modeling effort, we compared married preretired immigrants to their Canadian-born counterparts. Figure 7.4 shows their contrasting distributions over levels of the *predicted* overall indicator score concerning preparedness to deal with retirement's challenges.[3] Some 46% of immigrant preretired men have scores in the top two quadrants of the predicted values, a figure far higher than just over 30% for their female counterparts. In contrast, the distributions for preretired Canadian-born men and women are very similar, confirming that immigrant women may be in a special situation regarding their preparedness to meet the challenges that might arise during retirement.

[3] A simple cross tabulation using the *observed* indicator scores would not produce publishable data due to sample size issues.

7.5 Discussion

The indicator presented here demonstrated substantial differences between women and men when educational level, marital status, and immigrant status are taken into account. Even when they have university degrees, women are less likely to fall into the top levels of the preparedness indicator than men. When marital status is considered, widows are less likely to be at the top levels of the indicator than widowers.

Women's greater longevity entails higher risks of encountering certain important misfortunes. For example, it is well known that women are more likely to have more years with significant disability and poor health. These and other Third Age perils for which women are at greater risk than men include exhausting one's private sources of income, widowhood, losing important members of one's social support network, high costs of health care, long-term exposure to inflation risk, and premature departure from the labor force (for details, see Rappaport 2006; Society of Actuaries 2010).

This leads one to conclude that programs designed to provide assistance to persons preparing for retirement should consider the greater risks for women, both at a financial and a social level. With the demographic reality that "boomers" have fewer adult children on which to rely than did previous generations, comes the importance of women being active in planning to address both financial *and* social needs in advanced age.

These ideas seem to take on special significance when we revisit the finding concerning the gender differences in preparedness at the lower levels of educational attainment, among those who are divorced, separated, or widowed, and in the population segment that comprises immigrants. In these populations, the differential favoring men is much sharper than is the case for the whole population of pre-retirees.

In an unpublished analysis of Health and Retirement Survey data for 2008, we found some parallel results for the USA (the paper is available from the authors). In this work, we sought to identify key demographics based on a model whose outcome variable is a two-valued composite indicator of risk management potential. (In focusing on potential, the question was not what activities were being undertaken but who had combinations of attributes that point to high or low potential to engage in those activities. These attributes were chosen based on the results of the analysis reported in Chap. 6.)

Using these HRS data, we found 55% of the pre-retired population at the bottom level of the two-valued indicator. Using the statistically important variables of the model, demographics were defined using the following attributes *simultaneously*: sex, race, marital status, place of birth and period of immigration, education, reported health status, occupation group, and household income quartile.

Seeking demographics in which the average predicted probability of being at the bottom level was at least 0.75, we found 479. Among these 310 were female population segments. The two largest low-scoring key demographics had 115,000 women and 69,000 men, respectively. Among the many female key demographics, there were higher-than-average proportions in a variety of nonmarried marital statuses. Widowed and separated or divorced were the most common of these marital statuses.

Among these key demographics, education rarely is as high as "some university," reported health status is usually "fair" at best, and the residual not-elsewhere-specified occupation class is ubiquitous.

Of special interest are the attributes of low-scoring key demographics that had at least some university education. The largest of these types of key demographic were comprised of women, and the key demographic that had post-bachelor's degrees comprised nonwhite women. They are all American-born widows (for related discussion, see Rappaport 2006; ERISA Advisory Council 2010; Johnson 2011).

What we wish to emphasize here is that in the study of gender differentials concerning risk management specifically or retirement preparedness more generally, analysis needs to be focused on key demographics. Too many important variations are being "washed out" when the pre-retired population is considered as a whole (for related discussion, see Zimmerman 2009).

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Chapter 8
Epilogue: Lessons and Proposals

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Future research about retirement-related risk management will benefit from improvements in the existing data-gathering initiatives. An important dimension of improvement comprises data to support efforts to measure and analyze competence in *comprehensive* risk management. Cascades of losses that are linked across multiple financial and nonfinancial domains, along with limited coping resources, lead one to confront the challenges of comprehensive risk management. These challenges prompt questions about adult educational systems in all countries, especially those that experienced substantial postwar baby booms but also others where population aging will eventually increase substantially the ratio of retirees to workers. Below we offer recommendations concerning areas for theory development and data improvement initiatives and raise questions about available educational system offerings.

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8.1 Recapitulation of Core Concepts

It seems useful to recall the basic dimensions of retirement-related risk management activity. Risk management is about imagining potential misfortunes and losses and making arrangements to lower the chances of encountering them *or* to cope with them should they be met.[1] Our particular concern is with comprehensive risk management in addressing misfortunes or losses whose probabilities rise to substantial levels during the Third Age. Comprehensive risk management goes beyond handling various risks as separate domains of concern. It includes addressing *cascades of linked losses*, along with the *prioritization* and *optimization* processes mentioned above.

The expression "Third Age" in the preceding paragraph is important. It signals the fact that persons must eventually face many issues which might trigger risk management even when concepts such as retirement, pensions, and savings plans have no useful meaning in their lives.

8.2 Highlights of the Findings

8.2.1 A Rising Level of Risk Management Complexity

To set the stage for the recommendations, the text will now offer a capsule summary of the main theoretical propositions and substantive findings presented above. In its context-setting part, the book contains two central messages. First, it is important to adopt a *comprehensive* view of the potential misfortunes for which retirement-related risk management might help. Second, systemic and demographic changes have gradually increased the complexity of persons' risk management challenges. The tempo of the increase might have been accelerated by the 2007–2009 financial crisis and the subsequent economic slowdown. A substantial percentage of baby boomers now have little or no time available to recover from their losses across markets for labour, housing, and financial assets. The scope of the losses has been well described in Society of Actuaries (2011).

Many of the systemic changes cited above entail a lowered profile for various kinds of collective risk pooling, and by 2011, we find government documents openly accepting the idea that greater burdens and complexity in risk management have been placed on the shoulders of individuals and families. For years, propositions about this process were to be found primarily in academic writings, especially in Hacker's *The Great Risk Shift* (Hacker 2006). More recently, Taylor (2008) has placed a focus on the lowering of employers' provision of health benefits for retirees. Taylor was writing about the USA (see also Orenstein 2009), but he is joined

[1] Speculative risk, where one hopes for gains, is not considered here.

by analysts in other countries, dealing with their own national contexts, for example, Hunsley in Canada (Chap. 2 in this book), Bateman (2009) in Australia, Papworth (2010) in Britain, and the Task Force on Financial Literacy (2010), also in Canada.

8.2.2 Heightened Risk-Anxiety in the Older Population

The quickening tempo of rising complexity in risk management challenges has contributed to a marked fall in confidence about the ability to manage future life challenges within the baby-boomer generation. We suggest that this drop in confidence points towards a permanent rise in risk-anxiety (defined in Chap. 4) in the older population, and that rise will eventually increase the perceived priority of risk management activities in their lives.

An effective execution of these activities is demanding in terms of both knowledge and abilities across a wide field, not merely in those of financial literacy and financial management capacity. Even within financial management capacity, we argue that risk management has special demands in the areas of awareness, attentiveness, knowledge, and abilities, all dealing specifically with *strategies* for approaching risks.

8.2.3 Factors in the Utilization of Professional Financial Advisors

Our findings about the utilization of professional financial advisors arise from three models that dealt with linked outcome variables. They include the sense of need for assistance with financial management and trust in professional advisors. The results support the work of earlier researchers who tended to highlight the importance of personality factors and subjective variables. At the same time, our results indicate that background demographic factors are highly relevant and should not be ignored. When the dependent variable was the actual utilization of professional advisors among persons who obtained advice from some source, the strongest predictors in the EBRI data were worry about economic dependency in retirement, proximity to the expected date of retirement, membership in a workplace pension or retirement savings plan, household income, and the expected variety of sources of retirement income. In the Canadian Survey of Financial Capacity, the strongest predictor variables were occupation, financial self-assurance, immigrant status, education, and net worth ranking. Among the levels of financial self-assurance, the conditional probability of receiving financial advice from professional sources was least in the top and bottom classes. The discussion section placed a spotlight on the weak gender differentials found, suggesting that this pattern could point to an important challenge facing the providers of financial services.

8.2.4 Key Population Segments Vary Widely in Retirement-Related Risk Management Capacity and Performance

Bringing together the contrasting profiles of the high-performing and low-scoring key demographics, Chap. 6 finds support for our theoretical position that high and low potentials to achieve effective retirement-related risk management arise from *networks of variables linked via causal chains*. At the end of one class of chains is the creation of enormous advantage, while a great handicap is associated with the endpoint of another set of causal chains. Within these chains, *no single variable is dominant*.

The theoretical position just outlined derives from the widely accepted sociological axiom that macrosocial arrangements and culture structure opportunities, roles, and statuses are based upon certain ascribed attributes (notably gender, racial origin, and some aspects of language and culture). These in turn influence access to a wide array of resources (notably education and access to good retirement planning information) needed to become effective in risk management activity. Unless the interrelated nature of these broad macrosocial forces is taken into account explicitly, there will be a tendency to underestimate the depth of the challenge of effectively promoting improvements in risk management behaviour. Our findings also indicate that efforts to bring assistance to those who are not well positioned will be confronted with challenging heterogeneity among the relevant distinctive population segments.

Overlaying the status and cultural variables cited above are personality traits that have few if any correlates in data that group individuals. The fact that individuals normally see competition among alternative uses of available resources (not the least of which is time), a reality that requires the setting of priorities, means there is ample room for personality traits to be influential in risk management behaviour. These traits become statistical noise in the type of analysis reported above.

8.2.5 The Gender Dimension of Retirement-Related Risk Management

An important closing note to this summary of the main points of theory and research findings from our book is the caution to be sounded about the need to attend to the special challenges facing women with great longevity. There are few analogues for these challenges among men. However, before saying more on this theme, an important caveat needs to be stated.

Where women and men live in familial settings (including those not associated with formal marriage or parent–child bonds), resources provided within these settings are important in managing certain types of risk (see Keefe et al. 2005 for related discussions). Analyses, including ours, need to focus more on devising variables that point towards these familial resources.

In pursuing the identification of distinctive population segments, we found that women are over-represented in the lower-performing key demographics. In the data for both Canada and the USA, these low-performing key demographics were disproportionately concentrated in household settings where they were not spouses. In addition, they had a higher-than-average rate of reporting health status as less than very good, were concentrated at lower levels of education, and employed in occupations and industries where there is likely to be a light flow of retirement-related information. The key demographics comprising immigrant women are of special concern.

The US Society of Actuaries has already placed a focus here, and a good summary of the issues facing women baby boomers can be found in Rappaport (2006). In a nutshell, women face higher risks of encountering certain types of misfortune. More than men, women tend to experience the following losses: outliving assets, loss of spouse or other significant others in one's life, a decline in functional status, high health-care expenses, and a depletion of the purchasing power of one's savings because of inflation. Since the work published by Rappaport, several major US research centres have embarked upon important studies about women's retirement issues.

8.2.6 Advancing Methodology in Demographic Analysis

This book makes special contributions in the area of demographic analysis techniques. Since few large organizations dealing with populations survive without attention to demography, this matter has applications beyond university departments that offer graduate diplomas and degrees in this discipline.

Professionals in demographic analysis learn about populations partly by studying the statistical association between *intergroup differences* in composition and aspects of behaviour (the latter often measured in terms of rates). This strategy is the source of our focus on estimating probabilities of behavioural outcomes among population groups.

Implications of compositional differences for aspects of population behaviour are often addressed via multiway cross tabulations when it is necessary to keep the focus upon population subgroups. However, the multiway cross tabulation requires large subsamples.

In Chaps. 5 and 6, we propose and illustrate a route for studying implications of compositional differences for outcome probabilities without having to rely on the traditional cross tabulation. This route involves replacing a survey respondent's single response (the outcome variable of the analysis) with the *predicted probabilities* of each of the possible responses. This probability distribution is generated by the set of parameters and the functional form of an adopted prediction model.[2]

[2] The probabilities apply to that particular respondent, and they depend upon a combination of her or his attributes.

Linked to this work is our demonstration of a demographic approach to testing goodness of fit of such prediction models. This approach contrasts with the traditional one that involves a case-by-case matching of predicted and observed responses.[3]

The methodology tools that Chap. 6 proposes bring no innovation in the science of statistics, since they are well known in that field, but this fact is advantageous to demographers. The advantage lies in knowing that the foundation of statistical procedures underlying our proposals is well established in the parent field of statistics.

The functional form of the component models makes use of combinations of population attributes. When we wish to know how many people in the population have a particular combination, we may be taken back to the traditional cross tabulation. However, in situations where this is unsuitable (e.g. when the sample is simply too small for a routine cross tabulation to be effective), we present in Chap. 6 a virtual bootstrap method that would produce distribution-free confidence interval estimates around expected values of population size. The pattern of overlap among confidence intervals can be used to classify a large set of key demographics into groups according to order of magnitude in size. This will be quite adequate for many practical purposes in the field of social science, in private-sector marketing, and in government policymaking.

The usage of these advances in demographic analysis methodology is not limited to any specific cultural or national context. Everywhere, "Population Studies Centres" and private or government-centred think tanks and other groups specializing in targeting population segments (to support organization programmes) can use these methods to improve their work.

8.3 Proposals

8.3.1 Needed Theory Development

Research on population behaviour in the area of personal risk management needs to be guided by the development of theory. Other researchers have already identified some important questions that should be the focus of theory development. Here are several of them:

- In the field of retirement planning, what are the processes by which people first gain awareness that they face a wide network of potential losses and then move on through a series of steps to the point where they undertake some protective risk management activities?
- Once people realize the need to prioritize risks, what are the main patterns in risk-prioritization strategies?

[3] The details of this procedure were dropped from the book to save space, but they will be provided on the Internet as a free download for use by students.

- Having established the priority order, what are the primary methods of seeking an optimum allocation of their scarce risk management resources?
- What are the factors that determine who, among individuals in a given cultural setting, will explicitly take steps towards comprehensive risk management?
- What are the main factors that explain variations in the level of attentiveness to risk issues, as well as degree of desire to allocate one's scarce time to addressing these issues?

An individual's progress can be blocked at various points along the route that starts with sensing their exposure to risk and ends with taking action in the area of risk management. What are the key points at which people tend to encounter obstacles, and what are the major factors that help to predict whether the obstacles will be effective in blocking further progress? Many analysts have asked a related question: Why do so many people seem to have a good awareness of risks and develop plans to take action but eventually take no action?

8.3.2 Need for Major Improvements in Behaviour-Oriented Survey Data

How can researchers make more rapid progress in advancing knowledge about aspects of personal risk management such as those just mentioned? Researchers need resources to conduct surveys whose design anticipates their efforts to estimate *conditional probabilities of behaviour outcomes* in retirement risk management. Retirement surveys are rarely designed to support this type of analytical work. Adequate surveys would place enhanced focus on attitudes, knowledge, and activities that are relevant to a multivariate explanation of different aspects of risk management behaviour. A focus on explanation implies careful attention to the timing of key events in respondents' lives.

In addition, *large-sample* surveys such as those done by Statistics Canada and the US Census Bureau's Current Population Survey are desperately needed. At present, analysts have available an array of surveys where the total sample size is 1,500 or less. This may be quite adequate to track certain broad trends in the population as a whole and to explore bivariate associations at that level (although we should be alert to the strong potential of such associations to provide misleading information without supporting multivariate analyses of the type carried on in this book). Once we begin to probe relationships that require substantial subsamples representing particular population segments, the currently popular total sample sizes (1,500 or less) are seriously inadequate.

It is quite common, for example, to find that when we try to pinpoint the pre-retired subpopulation that is holding down a full-time job, the available subsample rapidly falls to something close to 200. This size represents a serious limitation to deep analysis. It must also be recognized that when samples of approximately 200 people are taken a few years apart, and each sample comprises

a different set of individuals, its use to calculate reliable information about national trends is hazardous.

Regarding the issue of probing relationships that involve population subgroups where sample sizes of around 200 are far short of adequate, a particularly important class of applications is illustrated in the statistical work presented in earlier chapters. This is the class of applications where it is necessary to estimate probabilities of certain outcomes *based on a set of relevant prior conditions*. In many areas of risk management, for example, utilization of professional financial advice and development of reliable probability estimates connected with behaviour outcomes would be greatly valued in both the private and public sectors. This is true both at the organization level and among retirement planning advisors. It is very difficult to provide reliable estimates of probabilities based on samples of a couple of hundred people. However, in the current state of data gathering, this is what researchers must often use.

Of course, these sample surveys are expensive—even the ones with a total sample size of 1,000–1,500. Could a consortium of survey sponsors help to provide much larger samples to support the needed multivariate analyses?

8.3.3 Supply of Relevant Educational and Coaching Services

All stakeholders should regard the possession (or lack of same) of relevant knowledge along with access to opportunities for improving this knowledge as being a major retirement-related risk (see Chap. 1 for related discussion). It is not a great exaggeration to say that in countless personal lives and family settings, a lack of needed knowledge has had catastrophic consequences. The theoretical sections of earlier chapters emphasize the role of knowledge as a predictor variable even when its effect on the outcome variable was indirect (its influence was exerted through other predictor variables, income being a prominent example). The results of the statistical analyses confirmed our focus on knowledge is a relevant factor. Many readers will react to these remarks by saying "we already knew this". Nevertheless, it is important to come back to this factor and raise an absolutely central and linked question: What are we doing about the many significant pockets of knowledge deficiency in our population? For example, when various advisors and coaches provide retirement-related services to clients, how much focus are they placing upon stimulating the clients to address their important knowledge deficiencies? All stakeholders should be looking at this issue of how to upgrade relevant knowledge and attentiveness among the pre-retired population and their children.

Where in the educational system would one find opportunities to pursue growth in *risk management competence*, addressing both aspects of knowledge and those of skill? What are the major obstacles to access to these opportunities? Suppose we find large segments of the population seriously under-prepared in this area, from which venues could the remedial knowledge be delivered?

This question brings up some important considerations concerning the supply of relevant professional services. What are the main sources of training and accreditation of teachers and coaches in various fields where they impart knowledge and training concerning retirement risk management to groups of clients? What are the scope and the depth of the training received by these teachers and coaches, and what are the major gaps in their preparation to provide assistance to groups of clients? What are the subject-matter scope and the quality of the services offered by these professionals?

The accessibility of these professional services also needs to be addressed. Is accessibility largely limited to the well-to-do and well-connected? And where access is provided, what is the take-up rate within the relevant client pool? What are the determinants of the rate, and what can be done, given knowledge of those determinants, to promote needed improvement in the take-up rate?

The preceding questions about educational opportunities are especially applicable in countries that have community colleges where adults can enrol without being engaged in a formal degree or diploma programme. These colleges often provide remedial programmes to improve students' ability to learn what is needed. Research is needed concerning the programmes offered by community colleges or parallel institutions in countries where these do not exist. Support for this research requires systematic data gathering about topics such as curricula, accessibility and affordability, effectiveness of outreach, the extent to which the exposed population has access that it is not using, the supply of suitably trained teachers and coaches, and institutional budgets.

A variety of data-gathering strategies would be needed to support the proposed research, depending on the issues and the target population. The data sources would comprise administrative records and curriculum documents, the Internet, and standard sample surveys. There is also a need for focus-group interviewing to probe issues and insights in the context of producing relevant qualitative data.

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Index

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