

Challenges to Canada's Retirement Income System



Using Web Tools to Help Canadians
Better Prepare for Retirement

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Introduction

Planning for retirement is a complex process: there are often many potential alternative investment options to select from, a considerable amount of information available about each alternative and many factors and aspects to consider when making a choice. The complexity of the process of financial planning makes it difficult for most people to make a well-informed decision that best helps them achieve their goal. A 2005 survey by the Royal Bank of Canada reveals that people consider choosing the right investments for a retirement saving plan to be more stressful than going to the dentist. Given the increasing responsibility of individuals for their retirement incomes, it is more crucial than ever that they have adequate financial knowledge and skills to make the best choices possible for reaching their retirement savings goals.

In 2009, the Task Force on Financial Literacy was tasked with providing advice and recommendations to the Minister of Finance for developing a national strategy to strengthen the financial literacy of Canadians, including examining the relationship between financial literacy and planning for retirement. After an 18-month period during which the Task Force commissioned research studies, consulted with stakeholders from across the private and public spectrums, and examined best practices in the field, the Task Force released a comprehensive series of recommendations for helping Canadians to achieve a higher level of financial literacy.¹

The appointment of the Task Force demonstrates policy makers' growing concern for improving Canadians' financial capabilities. With the increasing complexity of our financial systems, some Canadians may not have the skills or knowledge to protect themselves against the type of economic shocks that have occurred in recent years. To address this concern, the Task Force argues for a coordinated effort across the public and private sectors to strengthen Canadians' financial literacy, going so far as to recommend that it be deemed an "essential skill" whose foundation is developed in the formal education system and reinforced throughout an individual's lifetime. One of the recommendations of the Task Force is the need to explore Internet-based solutions to reach Canadians across the country and help them navigate the tremendous amount of information that is currently available. By creating a comprehensive and impartial Web-based resource, the federal government can fulfill a unique role in supporting Canadians' ongoing financial education.

There are a number of potential benefits resulting from the use of the Internet in delivering financial education. For one, Canadians are already well-versed in accessing financial information, education and advice online. In 2005, the Organisation for Economic Co-Operation and Development reported that the Internet is quickly overtaking printed materials as the most frequently used vehicle for providing financial information (OECD, 2005). According to Social and Enterprise Development Innovations (2006), over 80 % of all financial capability services and products in Canada relied on electronic delivery, and two-thirds of them were available only online. Recent figures from Statistics Canada are showing that Canadians' Internet use is high and still on the rise, with 80 per cent of Canadians aged 16

¹ www.financialliteracyincanada.com/canadians-and-their-money.html

and older reporting that they used the Internet for personal reasons in 2009, up from 73 per cent in 2007.²

Given the widescale and growing use of the Internet, online technologies present policy makers with a cost-effective and efficient way to distribute information and learning opportunities. Recent developments in Web-based e-learning technology have facilitated the development of online needs-based resources, where the provided information and links can be customized and delivered according to the identified needs for specific categories of users. e-learning is demonstrating that it has the potential to improve the flexibility and quality of learning by:

- providing access to a high-quality, evidence-based range of multimedia resources and interactive material;
- reducing geographic and physical barriers to learning;
- tailoring the learning environment to the learning needs of individual learners, allowing them to choose content and tools that are appropriate to their differing interests, needs and skill levels;
- enabling learners to control the timing, location and pace of their learning.

This report proposes a design for a randomized experiment to provide insights into how the tools and information available on the Internet can be harnessed to help Canadians in their retirement savings decision-making. The proposed demonstration project is designed to provide reliable evidence on whether individuals' level of financial capability and confidence can be improved by providing them with a well-designed financial package tailored to their needs. This experiment would provide an important contribution to the growing body of research on the links between financial capability and debt and savings behaviour. It would also further our understanding of what methods are having a demonstrated effect on increasing Canadians' awareness and use of available electronic financial information and services to save more for the future.

² www.statcan.gc.ca/daily-quotidien/100510/dq100510a-eng.htm.

Financial knowledge and behaviour

Over the last two decades, a growing body of research has begun documenting the state of financial knowledge and behaviour in Canada and abroad. In the United States, Bernheim (1995) was one of the first to show that many consumers are not adequately equipped to make financial decisions. In Canada, new studies using the 2009 Canadian Financial Capability Survey (CFCS) are beginning to provide important insights into the current state of Canadians' financial knowledge and financial practices.

Financial literacy

A number of studies have shown that financial literacy is an issue facing many countries: a majority of people have difficulty understanding basic investing concepts, and many people have difficulty understanding the basics of consumer loan and mortgage terms.³ A recent study by TNS on personal risk assessment and risk literacy reveals that only 13 per cent of Canadians surveyed correctly answered three basic about the relative payout of two lotteries, the relative risk and returns from two investment funds, and the relative risk of investing in a single stock versus a basket of stocks. Only 10 per cent of respondents indicated that they have increased their efforts to educate themselves on financial matters since the global economic crisis began.⁴

The Task Force on Financial Literacy defines financial literacy as "having the knowledge, skills and confidence to make responsible financial decisions".⁵ In a review of international research on the topic, Lusardi (2010) notes that the increase in many governments' attention to financial literacy issues has begun to focus on their citizens' preparedness for retirement, as they seek to find better ways to increase savings levels and improve portfolio choices, address high debt levels and bankruptcy rates, and assist citizens in avoiding financial mistakes.

There is empirical evidence that people with lower incomes and those with lower education levels are the most prone to lower financial literacy rates. (Campbell 2006). Lusardi and Mitchell (2008) found that many older individuals have difficulties doing simple interest-rate calculations and understanding inflation and risk diversification. They also find that financial literacy is very low among women and among African-American and Hispanic groups.

Low literacy levels have important implications in terms of financial vulnerability. Research shows that people with lower levels of financial literacy are less likely to plan for retirement, accumulate wealth, and participate in the stock market. Lusardi and Mitchell (2006), for instance, find that a lack of planning is causally linked to lower levels of wealth: they find that exogenous shocks to wealth did not generate more planning, while planning ends up generating higher amounts of wealth. In her review of international research on the topic, Lusardi (2010) notes that people with lower levels of financial

³ See for instance Hilgert, Hogarth, and Beverly (2003), Moore (2003), Miles (2004), Organization for Economic Co-operation and Development (2005), Smith and Stewart (2008) and Christelis, Jappelli, and Padula (2010).

⁴ <http://tns-cf.com/news/10.02.04-financial-risk.pdf>.

⁵ Task Force on Financial Literacy (2010), p. 4.

literacy are more likely to make financial transactions in a costly manner, such as paying higher fees or incur higher cost borrowing, due to their weaker understanding of fee structures, mortgages and interest rates. They are also more likely to struggle with debt or even understand their debt situation accurately.

Financial capability

When looking at international studies on financial literacy and financial capability, the distinction between the two terms can be blurry as they are often used interchangeably. As Kempson and Atkinson (2009) note, many countries utilize a broadly similar definition of financial literacy; however, “there is no single operational definition or agreement about the terms used to describe what is being measured.” In practice, they find that surveys on financial literacy tend to focus on levels of knowledge while surveys that expand their scope to behaviour, attitudes, and knowledge generally fall under the term of financial capability.

Much of the preliminary research on financial capability stems from the work of Kempson et al. (2005) in the United Kingdom (UK). Based on reviews of small-scale qualitative studies, the authors initially identified four separate domains of financial capability:

1. managing money – the ability to live within one’s means;
2. planning ahead – the ability to deal with risk and the longer term;
3. making choices – the ability to choose appropriate financial products; and
4. getting help.

This typology was then refined after completing a larger-scale data collection. The refinements led to dividing the first domain two sub-domains – “making ends meet” and “keeping track of money.”

The Adult Financial Capability Framework developed by the Basic Skills Agency and the Financial Services Authority in the UK identifies three key elements that determine financial capability:⁶

1. knowledge and understanding – the ability to make sense of and manipulate money in its different forms, uses, and functions, including the ability to deal with everyday financial matters and make the right choices for one’s own needs;
2. skills and competence – the ability to apply knowledge and understanding across a range of contexts including both predictable and unexpected situations and also including the ability to manage and resolve any financial problems or opportunities;
3. responsibility – the ability to appreciate the wider impact of financial decisions on personal circumstances, the family, and the broader community, and to understand rights, responsibilities, and sources of advice or guidance.

⁶ See Kempson et al. (2005).

This model provides the foundation for later research, particularly that of Lusardi (2010), who defines financial capability in terms of “how well people make ends meet, plan ahead, choose and manage financial products, and possess the skills and knowledge to make financial decisions.” As such, the concept of financial capability accounts for several types of financial behaviours, which Lusardi categorizes into four main areas:

1. making ends meet – the ability to deal with everyday financial matters and the extent to which people balance monthly income and expenses to avoid overspending;
2. planning ahead – the ability to plan life events, such as retirement and children’s education, as well as preparing for unexpected financial shocks;
3. choosing and managing financial products – the ability to manage their liquidity, how they borrow, and their exposure to financial market risks;
4. financial literacy and self-assessed skills – the ability to understand and process information that is often a required input for decisions.

These definitions of financial capability reflect the notion that concepts such as knowledge and understanding – which are typically understood to be the domain of financial literacy – are important elements of an individual’s level of financial capability, but that consideration must also be given to an individual’s skill and competency to use that information effectively to manage their resources and make financial decisions, as well as their ability to take responsibility for the financial matters in their life. Implicit in the concept of financial capability is that every person’s financial circumstances are different, and that the required level of financial capability can vary from individual to individual and over a person’s lifetime.

Canadian financial capability survey

The CFCS is the first national survey to examine the financial capability of Canadians. Conducted in 2009 by Statistics Canada on behalf of Human Resources and Skills Development Canada (HRSDC) and Finance Canada, the survey collected information pertaining to how Canadians approached their personal and household finances in both the short term and longer term. As such, it is providing important insights into Canadians’ approaches to money management, their use of financial products, and their financial habits and circumstances. The 2009 survey will serve as a baseline, allowing researchers to understand how Canadians’ financial capabilities will change over time.

The CFCS asked respondents about their behaviours and attitudes, and included a small set of questions about objective knowledge that were compiled and adapted from a variety of sources. The multidimensional approach of the survey reflects a growing awareness that additional supports may be necessary to ensure that financial knowledge is used effectively in making financial decisions.

Consistent with the surveys that have now been completed in other countries (Lusardi 2010), including New Zealand, Australia, Ireland, the United States, and the Netherlands, the CFCS is designed to capture how Canadians manage their resources, how they make financial decisions, the skill set they use in making such decisions, and the search and information elaboration that goes into those decisions. Recognizing that financial capability covers several aspects of behaviour, the survey’s analytical

framework is structured around four major domain of financial capability that are broadly similar to previous surveys, including:

- Managing money (making ends meet and keeping track);
- Planning ahead (major purchases, children’s post-secondary education and retirement);
- Choosing products (sources of advice, using advice, insurance products); and
- Staying informed (types of financial issues and methods used).

As researchers begin to drill further into the data, the CFCS is revealing which Canadians are struggling in their financial decision-making. Arrowsmith and Pignal (2010) used the conceptual framework of financial capability in their undertaken for the Task Force on Financial Literacy. They produced a comprehensive analysis of the survey data and found that nearly one-third (31 per cent) of Canadians are struggling to keep up with bills and payments. On the retirement savings front, the authors find that while most (70 per cent) Canadians are confident that their retirement income would provide the standard of living they hoped for, only 40 per cent have an accurate perception of how much they need to save to achieve their desired standard of living. Arrowsmith and Pignal also find that individuals who exhibit lower levels of financial capability tend to have lower incomes, lower educational attainment, and are more likely to be single parent households. The authors also report that men also tend to score higher than women, although this finding is not supported by McKay (2011), who found that “differences by gender were usually quite small and therefore of limited practical significance.”

While certain areas of financial literacy are a bigger challenge for some, Table 1 below produced by the Task Force on Financial Literacy reveals that Aboriginal Canadians and Canadians with low-incomes are more likely to struggle with low levels of financial literacy. The table also illustrates that certain skills such as planning ahead — a key skill for retirement preparation — are a struggle for a wider section of the population, including new immigrants, young adults and single people. As the Task Force notes, “too many people remain under-equipped when it comes to understanding money matters, and some groups are particularly vulnerable in this regard” (Task Force on Financial Literacy, 2010, p. 11).

Table 1 Who's Struggling? Who's Doing Better?

	Area of financial literacy				
	Making ends meet	Keeping track	Choosing products	Planning ahead	Staying informed
Who's struggling?	<ul style="list-style-type: none"> ▪ Aboriginal Canadians ▪ Young adults ▪ Very recent immigrants ▪ Low-income and low-net-worth households 	<ul style="list-style-type: none"> ▪ Seniors ▪ Adults who let other make most major and ongoing financial decisions for them 	<ul style="list-style-type: none"> ▪ Aboriginal Canadians ▪ Recent and very recent immigrants ▪ Young adults 	<ul style="list-style-type: none"> ▪ Seniors ▪ Aboriginal Canadians ▪ Very recent immigrants ▪ Young adults ▪ Low-income and low-net-worth households ▪ Singles 	<ul style="list-style-type: none"> ▪ Seniors ▪ Aboriginal Canadians ▪ Recent and very recent immigrants ▪ Low-income households
Who's doing better?	<ul style="list-style-type: none"> ▪ Seniors ▪ High-income households 	<ul style="list-style-type: none"> ▪ Very recent immigrants 	<ul style="list-style-type: none"> ▪ High-income and high-net-worth households 	<ul style="list-style-type: none"> ▪ Homeowners 	<ul style="list-style-type: none"> ▪ People who have taken a course in financial matters ▪ High-net-worth households

Source: Task Force on Financial Literacy (2010).

The role of financial education

The concept of financial literacy education is a relatively new phenomenon. Martin (2007) notes that in the United States, three-quarters of consumer financial literacy programs have been introduced in the late 1990s or early 2000s. As such, the research and evaluation of these programs is also relatively young and, despite the rapid proliferation of financial literacy and education programs in Canada and abroad, their effectiveness has yet to be fully understood. Therefore, the proposed framework is understood to be based on a developing body of research that is demonstrating some preliminary evidence of how financial education initiatives can influence financial behaviour.

The Task Force on Financial Literacy reports that Canadians now have access to a wide range of financial information from a host of service providers depending on their situation. For instance, banks are a major source of financial literacy education that is provided to their clientele or the general public through seminars and presentations, one-on-one counselling, websites, and financial advisors. Many community groups also offer some form of financial education in their programming for their clientele. People who are in financial difficulty can receive financial literacy services from credit-counselling agencies. Government regulators and agencies promote awareness of financial matters such as investing and fraud. Employed Canadians can receive financial training on a variety of topics from their employers, labour unions, or financial services providers.

Despite the plethora of tools and information to educate Canadians, the question as to its efficacy remains uncertain. Based on their public consultations, the Task Force noted that there was “a general consensus that, despite the availability of an abundance of educational materials to support financial literacy, many Canadians lack some or all of the skills, knowledge and confidence necessary to be financially literate.”⁷ de Meza and Reyniers (2008) review a series of studies that examine financial education effectiveness and find the results mixed due to the methods employed. They note that the most common source of evidence relies on self-reported measures, where people who receive an intervention are asked to rate its usefulness and impact on their future behaviour. However, this method suffers from self-selection biases. As well, participants often overestimate the impact of a program; without a follow-up to measure post-program behavioural change, most studies are unable to link the intervention to longer term outcomes.

Of the studies that do examine the effects of financial education on behaviour, de Meza and Reyniers argue that most only show modest positive effects. For instance, Bernheim, Garrett and Maki (2001) examined the effectiveness of compulsory consumer and financial education that was adopted in some American states but not others and find a small yet significant effect on savings rates when mandatory financial education had been in place for five years. Choi et al. (2006) examine the effectiveness of work-based seminars run by a large American firm and find that attendance marginally increased pension contributions; after the seminar, 8 per cent of attendees increased their contributions compared to 5 per cent of non-attendees. However, the study did not control for selection bias, which may downplay the effectiveness of the seminar even further.

To counter such selection effects, Duflo and Saez (2003) conducted a randomized experiment on non-faculty employees of a large American university. While all employees were encouraged to attend information sessions, some employees were randomly offered a small financial incentive to attend. The researchers found that there was a small increase in the fraction of employees in treated departments who enrolled in the pension plan after the information sessions. Similarly, Bernheim and Garrett (2003) find that workplace financial education has a modest impact on self-reported savings rates, particularly among employees with below-average savings rates.

de Meza and Reyniers suggest that while these studies provide some modest evidence that education has a positive effect on savings rates, there is no evidence that it has a corresponding effect on wealth accumulation. They point out that this may be in part due to methodological issues; the studies often rely on self-reported data and those for whom financial literacy is the most needed may be the most likely to mis-record their savings levels. Most studies also rely on cross-sectional data that is collected at a single point of time. One issue with this approach is that inferring causation is difficult as it is challenging to identify whether observed higher savings is a result of higher levels of financial education, or vice versa.⁸ Another issue with using cross-sectional data is that the effect of savings on

⁷ www.financialliteracyincanada.com/documents/Summary-of-Public-Consultations-eng.pdf.

⁸ Schwartz (2010) notes that self-selection is a major challenge for studies attempting to establish the relationship between financial education and financial outcomes. While many use established techniques to compensate for the existence of self-selection, “the ability of these techniques to establish causality varies from study to study and, in the end, their use does not allow strong conclusions to be drawn” (p. 7).

wealth may be lagged to some degree, and therefore it is not possible to establish linkages between savings behaviours and longer -term wealth accumulation. For this reason, the authors conclude that “the absence of a financial education effect on wealth remains something of a mystery, thereby casting some doubt on the savings effect” (p. 15).

The role of psychological and cognitive factors

In recent years, researchers have begun to question the traditional economic paradigm where saving and borrowing behaviours are presumed to be dominated by rational decision-making. The fields of psychology, behavioural economics and finance point to a number of psychological and cognitive factors that can explain support the view that rational decision-making is limited by the information individuals can understand and process; by the extent to which they behave in a cooperative or altruistic manner, and by their ability or willingness to act on their decisions.

There is a growing body of research from the field of behavioural economics that suggests that personal financial decisions are at times “suboptimal”, or what Benton and Sprenger (2007) describe as those decisions that are “out of line with an individual’s long-run self-interest.” In a field study targeting low-to-moderate income individuals in Massachusetts, the authors find that psychological factors, in particular self-control problems, explain in large measure the difference between individuals’ intended and actual savings irrespective of other factors, such as income, credit constraints, banking status, or other observable characteristics. For these researchers, the key issue is whether the observed behaviour is the result of a lack of information (what can be referred to as “nurture”) or whether it is attributable to human “nature”. In the former case, traditional educational strategies can play a major role in filling the knowledge gap and help people make better financial decisions. However, if it is the latter, then it is more appropriate to target interventions that can influence and/or mitigate fundamental behavioural factors or decision-making biases.⁹

While there is now a fairly well-developed body of evidence on the relationship between knowledge, savings, investing and planning, psychologists have begun to examine the ability of psychological factors to predict retirement savings behaviours. One such area of research is expectancy theory, which examines an individual’s expectancy that a specific action will lead to an intended behaviour, that the behaviour will produce certain outcomes, and that those outcomes are of a certain value to the individual. Originating with Victor Vroom in the 1960s, this theory hypothesizes that performance and motivation are linked, and that performance is based on individual factors such as personality, skills, knowledge, experience and abilities (Vroom 1964). Under this model, potential savers have to believe that they can engage in planning, saving and investing behaviours, that these behaviours will lead to their goal of having sufficient income in their retirement years, and that this process represents significant value to them.

Expectancy-value theory can be enhanced when the concept of perceived self-efficacy is included. The concept of self-efficacy originates with Albert Bandura (1977), who postulated that self-efficacy expectations, along with our beliefs in our capabilities to engage successfully in a given task or

⁹ Palameta et al. (2011) provide a thorough discussion of lessons from the literature on behavioural economics for the understanding of saving decisions.

behaviour, are major mediators of both behaviour and behavioural change. Individuals who have a strong sense of self-efficacy will devote more attention and effort towards resolving a particular situation while exhibiting greater confidence and persistence in seeing a task completed. Conversely, low self-efficacy expectations regarding a behaviour (or behavioural domain) are postulated to lead to avoidance of those behaviours, poorer performance in those behaviours, and a tendency to give up when faced with discouragement or failure.

In postulating the theory, Bandura argued that an individual's degree of self-efficacy will determine whether or not certain behaviours will be attempted, the amount of effort the individual will expend, and the length of time the behaviour will be sustained, even when faced with obstacles. Individuals who have high levels of self-efficacy can accomplish goals and succeed at the behaviours they attempt.

The concept of self-efficacy has been applied to a variety of domains, including educational research, addiction counselling, career and job-search decision-making, and work-related task performance, among others. There is a small but growing body of evidence to show that the construct of self-efficacy may play an important role in explaining individuals' preparedness for retirement. As such, it is showing that an individual's level of confidence or empowerment can influence their ability to use information resources more effectively, improve their savings decisions and ultimately lead to a change in savings behaviour. Bartholomae and Fox (2002), for instance, found that the teaching of financial literacy in high schools tends to increase financial knowledge, self-efficacy, and savings rates in the short term.

Dietz et al. (2003) developed a three-item scale to measure the role that self-efficacy plays in gender differences in retirement preparedness. The authors asked respondents to indicate their agreement with three statements: "I have little control over financial things that happen to me;" "I often feel helpless in dealing with the money problems of life;" and "There is little I can do to change many of the important money issues in my life." The three items were summed to form a scale which had a reliability coefficient of .69. They use this scale to test the hypothesis that women may approach retirement planning with a lower sense of financial efficacy than their male counterparts. They find however, much to their surprise, that there was no significant relationship between the level of self-efficacy among their respondents and their gender.

Based on a survey of over 2,500 university employees at a large university in the United States, Oliver (2006) found that self-efficacy beliefs about planning, saving and investing for retirement had a direct relationship with respondents' reported savings behaviours. In her review of the literature, the author finds that research on the importance of education, and specifically workplace education, in retirement planning has not demonstrated a strong link between financial education and retirement savings. She concludes that "understanding individuals' self-efficacy in this area may be an important element in understanding why financial education programs have been only minimally effective, and how these programs may be changed to be more effective" (p. 51). Therefore, she argues that the inclusion of self-efficacy may provide a more thorough understanding of the psychological factors that need to be addressed when designing policy to encourage people to undertake more retirement planning.

Oliver (2006) developed an expanded 28-item Web-based scale, called the Retirement Savings Self-Efficacy Inventory (RSSEI), that is "designed to assess the respondent's degree of confidence in the ability to engage in planning, saving and investment behaviours known to lead to the successful

accumulation of retirement funds” (p. 15). For instance, respondents are asked to rate their confidence in completing in such activities as:

- Find all of the information that you need to calculate how much you need to save for your retirement.
- Calculate what your financial retirement needs will be.
- Determine what percent of your income you need to contribute to your retirement savings account to reach your retirement savings goal.
- Obtain assistance from a qualified financial advisor to help you with your retirement planning.
- Build a retirement savings account large enough to provide enough money to live comfortably throughout your retirement years.

This scale provides an opportunity to gain a more in-depth perspective on individuals’ degree of confidence in their ability to save for retirement, plan for retirement and invest those savings in a way that will increase the value of their retirement accounts.

Research design, methodology, and feasibility

The literature to date has shown that the connections between financial education and behaviours have been modest and/or non-existent, yet considerable attention and resources are being devoted at the public and private level to improve the financial capabilities of Canadians. Our proposed research seeks to contribute to this body of knowledge by illuminating how financial education may play a role and how it can best be delivered through cost-effective web-based technologies.

Drawing on the range of studies about the causal relationship between increased knowledge and personal finance behaviours, we hypothesize that a Web-based intervention designed to improve individuals' knowledge as well as their capabilities and confidence with financial decision-making will contribute to better retirement planning and ultimately increased retirement savings levels. Specifically, the proposed research aims to test the following three hypotheses:

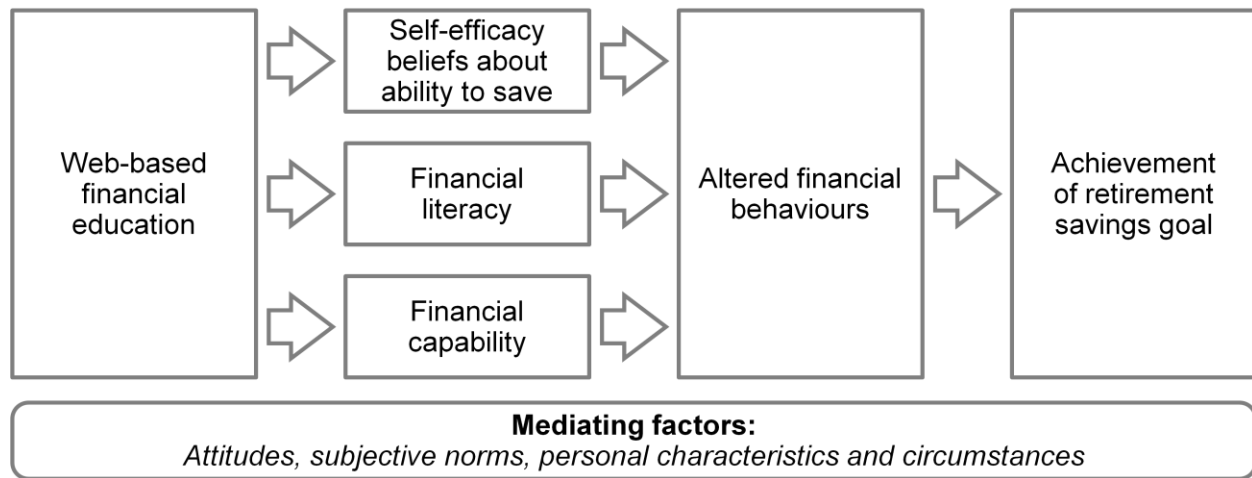
1. A Web-based financial education intervention can increase participants' financial capabilities, including managing money (making ends meet and keeping track), planning ahead (major purchases, children's post-secondary education and retirement), choosing products (sources of advice, using advice, insurance products), and staying informed (types of financial issues and methods used).
2. A Web-based financial education intervention can increase participants' decision making self-efficacy with regard to financial planning for retirement.
3. Participants who are more confident and have a higher level of financial capability can better prepare for retirement.

The design of the proposed research incorporates methodologies from the self-efficacy literature, complementing the perspectives from financial capability research that is examining individuals' abilities to manage their finances, plan for their future, choose among a range of financial products and keep informed about financial matters. By investigating the role of these various psychological factors, this research study will provide important lessons on the barriers and challenges Canadians face in achieving their savings goals.¹⁰

The analytical framework for the proposed research is illustrated in Figure 1.

¹⁰ To the extent possible, the proposed experiment will account for perspectives from the consumer behaviour literature that is examining the role of self-control (Tangney, Baumeister, and Boone 2004), time preference (Strathman et al. 1994; Ashraf, Karlan, and Yin 2006), and loss aversion (Carver 1997) in individuals' behavioural outcomes. For instance, Lynch, et al. (2010) developed and validated a six-item scale that measured respondents' propensity to plan for time and money based on the idea that individuals' propensity to plan is related to their use of money, and they find confirming evidence that low planners "face materially higher cost of credit."

Figure 1 Analytical Framework



We hypothesize that a well-constructed web-based financial education tool can play an important role in helping Canadians’ achieve their retirement savings goals. This financial education tool would build on already-available information and tools on the Internet and guide participants through a process where they develop a greater understanding of their financial circumstances and needs, and increase their competency in making financial decisions. Ultimately, the tool would enable participants to use their increased knowledge and skills to establish more meaningful and realistic retirement savings goals as well as the strategies and behaviours to achieve them.

We hypothesize that individuals’ beliefs and behaviours are influenced by their financial capabilities, cognitive (e.g. beliefs and attitudes), personal factors and circumstances (e.g. family composition, employment constraints, literacy and numeracy levels) as well as environmental factors (e.g. economic events and conditions).

One outcome that could be explored is the extent to which the intervention influences participants’ financial experiences. Lusardi and Tufano (2009) define financial experiences as “the entire set of financial experiences in which individuals engage: opening a checking account, buying bonds and stocks, and borrowing from traditional and alternative credit providers.” Using a survey that examines respondents’ financial knowledge related to debt, they examine a wide range of borrowing and investing experiences and transaction patterns of respondents which they classify into four main categories: using traditional borrowing, alternative financial service borrowing, saving/investing and credit card usage. They find that making financial “mistakes,” such as paying the minimum balance on their credit cards, incurring late or over-the-limit fees, using alternative financial service credit such as payday loans, tax refund loans, or pawnshops, is related to financial literacy levels. This research demonstrates the important link between individuals’ knowledge and awareness and the type of financial experiences they may have. As such, it provides a pre-defined set of intermediate outcomes that may be influenced by an intervention that is designed to increase participants’ financial capabilities and self-efficacy expectations.

Overconfidence may also play a role in poor financial outcomes, and therefore financial education may actually contribute to some participants developing a more realistic perception (hence reduced level of confidence) of their own abilities in managing their financial affairs. In their review of the state of understanding of the link between overconfidence and financial decision-making, Moore and Healy (2008) emphasize the empirical inconsistencies and methodological problems that have characterized this area of study to date.

Proposed interventions

The proposed experiment will be designed to assess the impacts of a Web-based financial education package delivered with or without the assistance of an impartial financial advisor, on individuals' retirement savings behaviours. There is no scientific research or model to provide guidance as to the appropriate duration and intensity for the self-directed, web-based interventions that are likely to produce improvements in participants' ability to translate financial information into action. One might expect (within limits) that the more intense the intervention, the larger the improvement in outcomes of interest. As well, it is hypothesized that the added support and accountability introduced by a financial advisor will enhance the effects of the intervention for participants.

The following descriptions of the intervention to be tested should be seen as preliminary as more research is required, including consultations with specialist in the fields that would be potential partners.

Financial education package

The financial education package will be designed in partnership with financial education practitioners who are experienced in designing and delivering financial e-learning platforms. It will be modular-based to help participants learn more about their financial circumstances and retirement goals, and then equip them to utilize existing, high-quality resources and services that will help them achieve their retirement savings objectives.

The package will be modular based and assist participants in gaining a better understanding of themselves in relation to their financial goals and needs, orient them to appropriate, high-quality financial resources and services, and provide activities and exercises to reinforce learning objectives and encourage action-taking. Participants would be given access to the intervention for a four-week period based on the idea that the financial education tool would include up to four modules, each one to be completed over a one-week period.

The design of this Web-based financial package would be based on previous SRDC research on evaluating e-learning interventions that has shown that e-learning platforms should be designed according to the following principles:

- Be highly navigable and logically constructed to encourage participants to engage with the range of content and activities that can aid them in addressing their particular challenges;
- Include an initial activity needs to help clients self-assess their needs and assist them in defining a possible path of participation through the intervention;

- Offer value to the learner beyond the simple presentation of information, by providing a structure that incites purposeful engagement and organization of learning, reflections, decisions and information materials;
- Provide learning outcomes for each learning module;
- Effectively accommodate participants who will move sporadically through the intervention and accommodate short-sitting times with bite-sized learning and development opportunities.

At a preliminary self-assessment stage, participants will be asked to take a quiz which would assess their learning needs before going into the intervention. For instance, participants could be asked to complete the financial knowledge test of the CFCS — a 14-item questionnaire that includes basic knowledge (quiz) questions on inflation and interest rates, credit reports and credit ratings, stocks and risk, insurance, taxation, debts and loans, and banking fees. The test content would be determined by the project delivery partner to be tailored to meet the design requirements of the e-learning platform.

Some examples of relevant financial education initiatives that the intervention could be modeled on include:

- **Practical Money Skills:** a free financial literacy program to help Canadians understand the fundamentals of money management. Created by Visa, the program offers money management resources including calculators, games, and lesson plans tailored for use by Canadian families and educators. The curriculum for the program is based on Visa's "Choices & Decisions," an initiative developed by educators in 2006 for use in the classroom. (See www.practicalmoneyskills.com)
- **GetSmarterAboutMoney.ca:** a comprehensive set of financial tools and information. Developed by the Investor Education Fund (IEF), a non-profit organization by the Ontario Securities Commission (OSC) that is funded by settlements and fines from OSC enforcement proceedings. The purpose of the website is to "develop and promote unbiased, independent financial information, programs and tools to help consumers make better financial and investing decisions." (See www.getsmarteraboutmoney.ca/Pages/default.aspx)
- **YourMoney:** a financial literacy resource for young people developed and funded by the Canadian Bankers Association (CBA). The program includes web-based resources and free, in-class seminars offered across Canada by local banking volunteers. (See www.yourmoney.cba.ca)
- **The Money Belt:** Developed by The Financial Consumer Agency of Canada (FCAC) to provide financial learning to youth aged 15 to 29 years old. The FCAC is expanding its programming to various adult populations, and has developed Money Tools, an online set of tools that can help Canadians learn about financial products and services. (See www.themoneybelt.ca/home-accueil-eng.asp)

Financial education package plus financial advisor

The financial education package will be enhanced by providing users access to online support from an impartial financial advisor during the intervention period. The role of the advisor will be primarily to offer assistance to participants in understanding the financial material and applying it to their own situation. The advisors could be available to participants in a variety of capacities; periodically checking in by email or through Web site messaging to see if they have any questions about the financial

education package, want to discuss their progress or to “check in” with participants to make sure they are engaged with the material. Advisors would be assigned a specific group of participants whose progress they could track through a custom interface that would indicate the modules as well as any exercises or questionnaires that the participant has completed. The advisors will be specially-trained experts who will be available through the website, by email or by telephone, and their assistance will help engender a greater sense of accountability and engagement on the part of participants.

One model that could be applied is the manner in which trained staff are available by telephone on the UK financial education Web site, Moneymadeclear.org.uk. This Web site is maintained by the UK’s Consumer Financial Education Body (CFEB) to provide impartial information, education and advice through a national Web portal. Users of the Web site who need further assistance can call an expert or arrange for an expert to call them by filling out an online form. While it is recommended that the financial advisor play a more active role in monitoring participants in the proposed project, the impartial role and type of assistance that the financial advisor provides could follow the CFEB model.

Experimental research design

The use of an experimental design can assess whether a Web-based financial education intervention can increase participants’ financial capability, their confidence in undertaking financial planning and ultimately their ability in reaching their retirement savings goals. One of the benefits of using an experimental design is that it can isolate psychological aspects in the savings decisions while controlling for a number of other factors that can influence savings, such as their prior level of knowledge and confidence as well as where they are in their life course. The design will account for the demographic and economic circumstances of individuals who are recruited for the research project, allowing the findings to be informed by the character of the life course with respect to participants’ current work, savings and social security options.

Under a random assignment design, all participants who sign up for the project will be randomly assigned at the time of registration into one of three groups: a control group, a “financial education only” treatment group or a “financial education plus financial advisor” treatment group. Members of the control group will not receive the specifically prepared intervention for the project; however, they will be asked to participate in the data collection and will receive financial compensation for completing the surveys. The data from the control group will represent what happens in the absence of the intervention. Those in the treatment groups will be eligible to access a new financial education package while those in the control group would not be eligible but would continue to be entitled to the various financial resources that are already available to them. The addition of a second treatment group will allow for an evaluation of the additive effects of combining support from a financial advisor to the provision of the web-based financial education package. By using two treatment groups, this project will not only test the effectiveness of offering a web-based financial education package to Canadians, it will also evaluate the added benefit that an expert advisor in enhancing the learning tools, and for which groups of participants.

The advantage of an Internet-based program is that it can be delivered at a low marginal cost; however its effectiveness remains largely unproven. By using two treatment groups, this project can help address the key question about the importance of the delivery mechanism.¹¹ As both treatment groups would be expected to cover the same topics using the same Web site, the difference between the treatments offered to the two treatment groups would be the facilitation of an expert advisor. The analysis could explore whether these differences are more profound for particular subgroups that may need more assistance applying the lessons and concepts within a self-directed program.

Target population and sample size

The proposed experiment would be targeted to Canadians in need of improved financial capability more generally, or to specific, policy-relevant target populations based on recent figures from the 2009 Canadian Financial Capability Survey. At this stage, it is recommended that the project target middle-aged, middle-income earners without a pension who have self-identified as being ill-prepared for retirement. Since results from the savings literature shows that this group is the most likely to have under-saved for retirement, it represents the most likely clientele for a public website aimed at assisting Canadians' in their savings decisions. As such, it represents a group whose pressing need for better skills in financial decision making would lead them to respond to a broad-outreach recruitment campaign, as they would have a more realistic perspective on the impact that their lack of savings will have on their post-retirement standard living. By allowing potential participants to self-identify their need for more financial education, the project would also not be excluding people who may be in need but would not be included in a targeted approach to recruitment.

Individuals who are recruited to participate in the study will be asked to read and sign a short consent form. The consent form will inform participants regarding the types of questions they will be asked to answer and how data collected will be analyzed and stored by SRDC. Participants will also be informed of their right to refuse to answer particular questions and their right to leave at any time.¹²

In deciding on sample size, statistical properties as well as policy issues come into play: decisions have to be made regarding how much statistical power the sample will have to ascertain whether observed impacts are "statistically significant" and how big a program effect would be considered "policy relevant." The statistical power of an impact analysis refers to the probability of rejecting the null hypothesis that the mean outcomes between the treatment and control groups are the same. It provides information about the likelihood of detecting important and meaningful treatment effects.

¹¹ The program satisfaction results from CareerMotion, a pilot project recently completed by SRDC to test the effectiveness of Web-based labour market information, reveal that participants are very interested in receiving some assistance from a trained professional. However, since such resources were not provided, the study is unable to determine whether such an intervention would have increased the effectiveness of their use of the Web-based resources.

¹² The content of the consent form will be quite short and straightforward since the project does not require any linkage of collected data to administrative data nor the collection of administrative data or confidential information that can identify participants. Asking participants to read it and sign it independently will likely suffice. SRDC has utilized this method effectively in its delivery of the CareerMotion pilot project.

At this point, we do not have reliable estimates of the mean and variance for all the outcomes of interest from which evaluations of the required sample size can be derived. For simplicity, let us consider a binary outcome variable that indicates whether or not participants feel confident in their employment and career decision making. Let us assume that in any pair-wise group comparison — for example between “control” and “treatment 1” or between “treatment 1” and “treatment 2” — the proportion with a positive outcome in the first group is 50 per cent. To detect a 15 percentage point difference in this binary outcome variable, a sample size of 175 participants in each group (525 participants in total) would be required. To detect a 10 percentage point difference in this binary outcome variable, a sample size of 350 participants in each group (1,050 participants in total) would be required.¹³

It is expected that there will be some level of sample attrition between the baseline and follow-up surveys. With sample attrition, minimum detectable effects are larger. For example, if we assume a response rate of about 85 per cent, a sample size of 175 participants in each group (525 in total) would go down to about 150 participants in each group and minimum detectable effects would go from 15 to 16 percentage points. Alternatively, a sample size of 350 participants in each group (1,050 in total) would go down to about 300 participants in each group and minimum detectable effects would go from 10 to 11.4 percentage points.

There may be particular subgroups of interest for whom separate impact estimates may be desired. For example, prior research has shown a strong relationship between education and income levels and financial literacy. Given sufficient sample size, subgroup analysis will be to identify those groups for whom the program works best and provide directions on how to allocate scarce resources where they will make the most difference. The sampling strategy may also have to include sample stratification to ensure that the research sample includes some minimum level of representation of members from identified subgroups of interest.

The requirement to measure subgroup impacts will affect the overall sample size. In order to detect similar minimum detectable effect, subgroups analyses require larger samples. As an illustration, let us consider subgroups that represent half of the sample (e.g., male and female participants). For any pair-wise comparisons within this subgroup (e.g., between “females–control” and “females–treatment 1” or between “females–treatment 1” and “females–treatment 2”) using the same assumptions as above, to detect a 15-percentage point difference in this binary outcome variable, a sample size of 175 participants in each of the 6 subgroups (1,050 participants in total) would be required.

With subgroups smaller than those, minimum detectable effects are larger, and therefore the possibility exists that some potentially policy relevant impacts may appear as observed differences between the treatment and control groups that are not statistically significant. For example, if the total sample is only 525 participants, the minimum difference between two subgroups of 87 participants being compared that would be statistically significant would be over slightly 20 percentage points.

¹³ These calculations of minimum detectable effects (MDEs) assume a two-tailed test with $\alpha=.05$ (10 per cent significance level) and 80 per cent power. The MDE is the minimum difference between the two groups being compared that would be statistically significant.

Data collection

By providing assessments of key outcomes at different points in time, our proposed research provides an opportunity to gain a better understanding of the intermediate factors that may contribute to longer term behavioural change, as well as the relative importance that each factor may have in any behavioural outcomes that are observed. To this end, outcomes will be measured at intermediate and longer-term time-frames, with immediate impacts expected on cognitive factors, as well as higher levels of financial literacy and financial capability, particularly in participants' level of financial planning. These effects are expected to be observed at the average level; analysis will be undertaken to determine which participants experienced the greatest relative benefits from the intervention, according to their exposure as well as their pre-existing characteristics and circumstances.

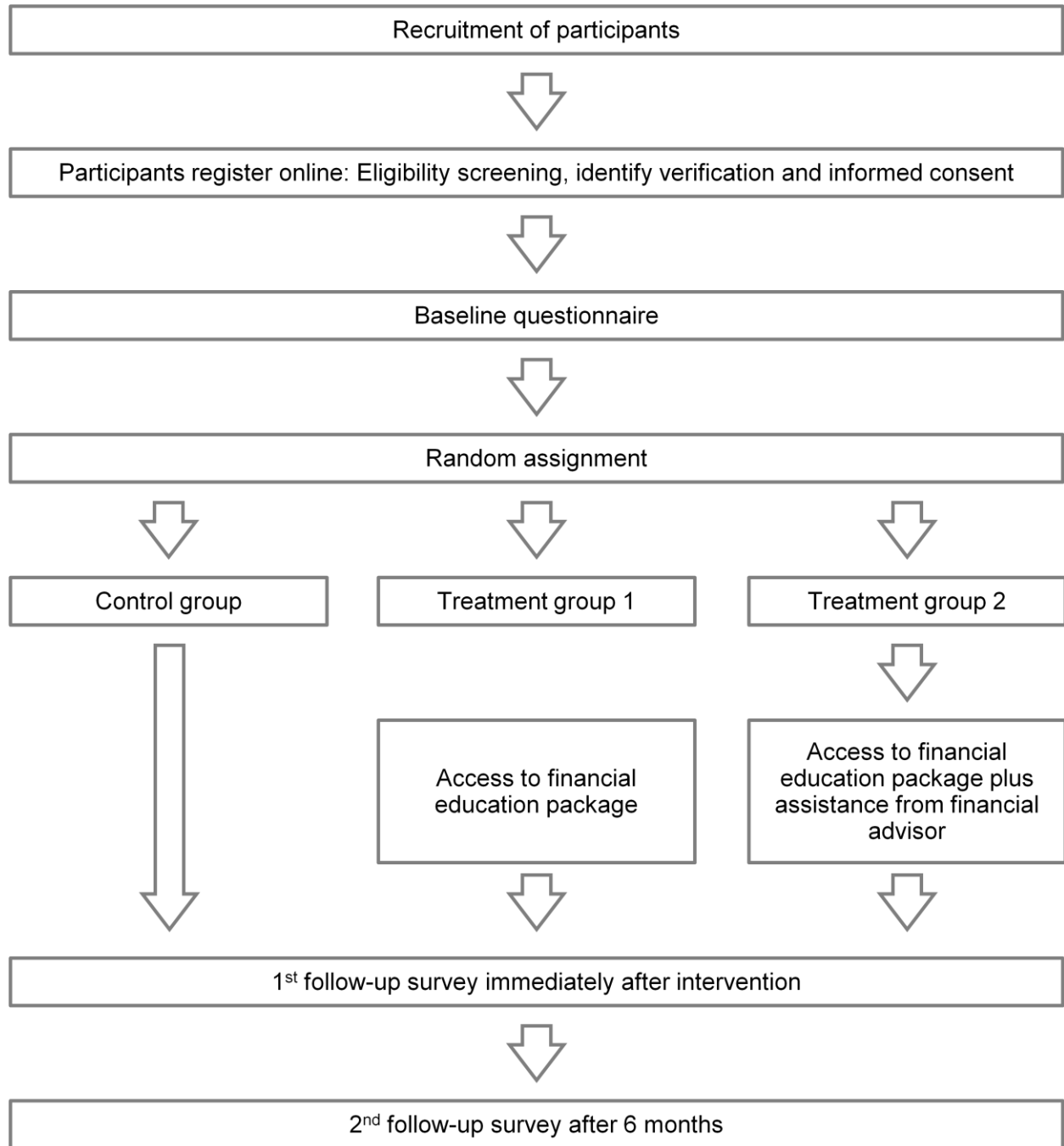
Data will be collected using a number of validated scales to provide post-program impacts on the study's primary outcomes of interest. An online pre-intervention (or baseline) questionnaire will be administered to all project participants to collect data on relevant individual demographic and socioeconomic characteristics as well as the current state of their capabilities, literacy, confidence and attitudes with regards to their retirement planning. The same questionnaire would be administered to all project participants (or post-intervention survey for those in treatment groups) immediately following the intervention period to determine its effects on their perceived capabilities and competencies to manage their financial future.

A second follow-up survey could be administered six months later to determine whether any observed changes have been sustained and have translated into actual behavioural outcomes, such as better financial planning or increased savings levels. At the time of both follow-up surveys, participants would be contacted by e-mail inviting them to complete the survey on a secure project Web site. If participants do not respond to the survey within the expected period of time, an e-mail or a phone call from project staff or a tracing provider will be necessary. Respondents would be paid \$50 for completing each of the follow-ups.

Data on usage and progress through the intervention will be collected by the Web site logs. The Web site analytics will be able to determine how long participants were logged in to the site, which modules they used and in what order, and any external sources of information they accessed.

Figure 2 below summarizes the project evaluation design.

Figure 2 Project Flowchart



Conclusion

Canadians are increasingly faced with a complex array of financial decisions that they have to make every day. These decisions can range from managing their personal debts and obligations, to funding their children's post-secondary education, to planning for their retirement. For many, the Internet is becoming an important tool for educating themselves about their financial options and accessing services to assist them in realizing their financial goals. The range as well as quality of these web-based resources is very wide, and some Canadians may feel overwhelmed in identifying and assessing what information they can credibly apply to their own situation and as a consequence may not be using it effectively to prepare for their retirement.

This report outlines the analytical framework and program design for evaluating the effectiveness of a web-based financial education package to assist Canadians in making better use of information that is already available to them, with the ultimate goal of helping them make better financial decisions to realize their retirement savings goals. It builds on the growing body of research on the state of financial capability in Canada and abroad to identify how web-based tools may best be utilized to address the needs of individuals who feel they are not achieving their retirement savings objectives. It details how such an intervention may be designed and the types of outcomes it can be expected to achieve.

As a rigorous evaluation of a web-based financial education tool, the proposed experimental study would represent an important contribution to our understanding of the role that web-based technologies can play in assisting Canadians in achieving their retirement savings goals. Given the significant public and private resources that are currently being devoted to developing such tools and resources, it would provide important lessons on the design and delivery of future web-based policies and programs to enhance the financial capabilities of Canadians.

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