

NBER WORKING PAPER SERIES

APPLYING BEHAVIORAL ECONOMICS TO PUBLIC POLICY IN CANADA

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Working Paper 22671
<http://www.nber.org/papers/w22671>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
September 2016

We are extremely grateful to Raj Chande (Behavioral Insights Team), Urvashi Dhawan-Biswal (Employment and Social Development Canada), Mireille Ethier (Canada Revenue Agency), Reuben Ford (Social Research and Demonstration Corporation), Elizabeth Hardy (Privy Council Office), Julian House (Treasury Board Secretariat), Kory Kroft (University of Toronto), Kathryn Mills (Canada Revenue Agency), Hasti Rahbar (Employment and Social Development Canada), Aaron Rosenberg (Canada Revenue Agency), Steven Ryan (Abdul Latif Jameel Poverty Action Lab), Dilip Soman (Behavioural Economics in Action at Rotman), Will Tucker (Ideas42), Sasha Tregebov (Deloitte), and Ekaterina Tyshchenko (Deloitte) for providing helpful comments and information. Opinions expressed in this paper are by the authors only and do not necessarily represent those from any government or institutional organization, nor those of the National Bureau of Economic Research. All omissions or errors are, of course, the authors' sole responsibility.

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NBER Working Paper No. 22671
September 2016
JEL No. J10,J18,J24,J48

ABSTRACT

Behavioral economics incorporates ideas from Psychology, Sociology, and Neuroscience to better predict how individuals make long-term decisions. Often the ideas adopted include present or inattention bias, both potentially leading to sub-optimal outcomes. But these models also point to opportunities for effective, low-cost government policies that can have meaningful positive effects on people's long-term well-being. The last decade has been marked by a growing interest from governments the world over in using behavioral economics to inform policy decisions. This is true of Canada as well. In this paper we discuss the increasingly important role behavioral economics plays in Canadian public policy. We first contextualize government policies that have incorporated insights from behavioral economics by outlining a collection of models of intertemporal choice. We then present examples of public policy initiatives that are based upon findings in the field, placing particular emphasis on Canadian initiatives. We also document future opportunities, challenges, and limitations.

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I. Introduction

For decisions involving immediate costs and long-term benefits, standard investment models in economics assume that individuals carefully consider every expected consequence from one action against every expected consequence from each alternative action. Take, for example, the choice that most commuters face each day on their way to work: the choice between walking up a set of stairs or standing on an adjacent escalator. How does the commuter resolve this decision? Under the traditional rational investment model, the commuter evaluates the immediate cost of taking the stairs against the long-term and uncertain health benefits of doing so (and likewise with the escalator). She then enacts the action with the largest associated lifetime net-benefit.

And yet, contrary to the traditional model's predictions, people often respond dramatically to small environmental changes that make one action more salient or attractive without significantly altering its consequences. In Hamburg, for instance, commuters suddenly started taking the stairs to work after city officials painted them in the design of a running track, complete with lane markers and pictures of other runners bounding forward.¹ In Sweden, designing a set of stairs in the form of piano keys – that actually played musical notes – caused 66% more people to choose the stairs.² In instances such as these, where the **chief** costs and benefits have not changed, we often see markedly different behavior result from supposedly irrelevant environmental

¹ In 2015, in a new subway station, Jungfernstieg, in Hamburg, Germany, a red running track was painted on top of a set of stairs with the goal of encouraging public transit use and the use of the stairs.

² In 2009 a small Swedish initiative sought to make the daily activity of taking the stairs more fun. You can watch the video of this particular initiative [here](#).

changes, and perhaps for a very simple reason: it is fun to pretend you are racing along a track or playing the piano.³

While traditional economic models may have a difficult time explaining such interventions' effects, the emerging field of behavioral economics seeks to refine the standard neoclassical assumptions of human behavior in an attempt to better predict these apparent anomalous actions. To do this, behavioral economics incorporates findings from Psychology, Neuroscience, and Sociology into its models of human behaviour. These models often allow for deviations from the standard assumption of economic rationality, capturing the cognitive and perceptual biases of our brains. Yet, at the same time, behavioral economics does not seek to reject neoclassical utility maximization models, but rather to refine them, to incorporate human tendencies that are not always in our best long-run interests, but nevertheless prevalent.

Incorporating more realistic assumptions of human behavior into economic models can lead to profound differences in predicted actions, many of which are of interest to practitioners and policy makers. To this end, the field has attracted wide and growing attention: compared to traditional programs with the same goals, interventions that draw from insights in behavioral economics may be more cost-effective, given that research suggests that even small changes in the way choices are presented or in the way information is conveyed can lead to large changes in behavior.⁴

As a consequence of this research, the last decade has been marked by a growing interest from governments across the world in using behavioral economics to inform policy decisions. The

³ Richard Thaler, in his book 'Misbehaving', terms such irrelevant environmental factors as SIFs, standing for 'Supposedly Irrelevant Factors.'

⁴ For a summary of such research, see Madrian (2014).

pioneering example of government engagement with this field of research is the UK's Behavioural Insights Team (BIT). This team, known as the "nudge unit", was established in 2010 after Cass Sunstein and Richard Thaler's book "Nudge" made it to the British Conservative Party's summer reading list (Thaler, 2015). The stated objective of the UK's BIT is to spread the understanding of behavioral economics among British policy makers as well as to conduct trials and policy work that utilise findings from the field (Service et al., 2014). After the first two years of the BIT's inception, the team coined four principles that undergird their interaction with public policy and in turn succinctly summarize the way in which policy makers the world over seek to incorporate findings from behavioral economics into their policies more generally: 1) make it Easy; 2) make it Attractive; 3) make it Social; and 4) make it Timely (Service et al., 2014).

The appeal of applying behavioral economics to public policy has been the low costs associated with many of the behavioral economic interventions, the effectiveness of such interventions, and the ease of testing these interventions through randomized control trials. That the UK's BIT successfully introduced many cost saving and effective policies has served to propel the use of behaviorally based initiatives across a wide range of government departments in many countries; many government initiatives have explicitly stated that they intend to model their respective behavioral insight teams after the UK's BIT.⁵ Departments utilizing behavioral insights have subsequently developed in many countries within both the private sector and the public sector, and with collaboration between the two sectors (Whitehead et al., 2014).

Within the last few years behavioral economics has played an increasingly important role in policy making within Canada. At the federal level, the Innovation Hub at the Privy Council

⁵ See, for example, the official [announcement](#) concerning Ontario's Behavioural Insights Unit and the White House's Social and Behavioral Sciences Team 2015 [Annual Report](#) (Ministry of Finance, 2015) & (Social and Behavioral Sciences Team, 2015).

Office was established in February of 2015. The Innovation Hub is a resource that works alongside other federal departments, acting as a source of expertise on areas such as behavioral economics and design thinking. Similarly, the Canada Revenue Agency and the Ministry of Employment and Social Development Canada have recently established Innovation Labs. The Canada Revenue Agency has been using insights from the behavioral economics literature for some time now and its Lab helps frame the experiments and disseminate the results across the organization. Additionally, at the provincial level, Ontario's Behavioural Insights Unit was officially established in 2015 and has since conducted several successful pilot projects all based upon some of the core principles of behavioral economics. We believe there is presently a growing enthusiasm for incorporating behavioral economics into public policy within Canada.

The purpose of this paper is not to provide an exhaustive literature review of studies documenting behavioral economic insights, but rather to provide an up-to-date report on the role that behavioral economics plays in Canadian public policy. In the next section, we contextualize government policies that have incorporated insights from behavioral economics by presenting a recent collection of behavioral economic models of intertemporal choice. We then provide a set of examples of policy initiatives that have incorporated insights from behavioral economics, with a particular focus on initiatives occurring in Canada. The set of examples is not intended to be comprehensive, but rather representative of the current policies that are being enacted within Canada. Finally, we consider the Canadian experience of behavioral economics in an international framework, comparing its experience to that of other countries. This final section will also document future opportunities, challenges, and limitations to incorporating behavioral economics into public policy more generally.

II. Behavioral Models of Intertemporal Choice

In this section we outline three models that are frequently used in behavioral economics as alternatives to the standard time-consistent intertemporal model of utility maximization. We do this to contextualize the government policies we discuss in the next section. All three models – present-bias, inattentiveness, and social identity, which incorporate tendencies observed in Psychology and Sociology – suggest new opportunities for effective, low-cost government policies that can have meaningful positive effects on people’s long-term well-being. We also underscore how behavioral economics should not be perceived as a rejection of neoclassical economics, but rather as an add-on that refines some of its underlying assumptions about human behaviour.

Many decisions in life involve immediate costs and long-term, uncertain benefits. Many of them matter substantially over the long-run, such as decisions to smoke, exercise, use sunscreen, save, study, and practice. Paul Samuelson, in his classic 1937 article titled, "A Note on Measurement of Utility", proposed an approach for formalizing an individual's decision-making process when considering such intertemporal trade-offs. Samuelson, in formulating his model of intertemporal choice wanted to extend Irving Fisher’s two period indifference-curve depiction of intertemporal choice into multiple time periods and, further, to show that “representing intertemporal trade-offs [in utility] required a cardinal measure of utility” (Frederick, Loewenstein, & O’Donoghue, 2002, p.355). Yet, despite his fervent reservations regarding the applicability of his model to questions of public policy, Samuelson’s formulation of intertemporal decision making became the bedrock of contemporary intertemporal utility maximization.⁶ The model's parsimony

⁶ Samuelson rejected the idea that the discounted model of intertemporal utility maximization be used in policymaking. He famously concluded his 1937 article by noting that the idea of using the geometric discount rate to influence “ethical judgements of policy is one which deserves the impatience of modern economists.”

and convenience for working with dynamic optimization problems explains its overwhelming use within the economics profession (Frederick, Loewenstein, & O'Donoghue, 2002).

Consider a discrete-time version of Samuelson's model, wherein each time period the individual faces a binary choice:

$$V(x) = \sum_{t=0}^T \delta^t u(x, t), \text{ where } x \in \{0,1\} \text{ and } 0 < \delta \leq 1. \quad (1)$$

The crux of this model lies in δ^t , the geometric discount rate. This captures all the relevant information pertaining to the intertemporal portion of the individual's choice-set. It is constant, implying that the individual compares taking the stairs now versus next week in the same manner she compares taking them a year from now versus a year and one week. Importantly, decisions are time-consistent on behalf of the individual; evaluated over any point in time, the individual is always satisfied with her earlier decision.

In discussing possible errors in intertemporal decision making, it helps to think normatively about how a person **should** trade off present versus future consumption to maximize her true well-being. Economists often assume individuals are best off in this model with $0 < \delta < 1$, even though this implies that teenagers value themselves now more than themselves 20 years from now, and parents value their younger children more than their older children. While more challenging to work with in solving dynamic optimization problems, O'Donoghue and Rabin (2001) argue that δ should be one. A δ value of one "is more in accord with the intuition that everybody...views as a more sensible welfare criterion: that we should wish on ourselves, our children, our neighbors, and society the equal weighting of the expected hedonic well-being at different moments"

(O'Donoghue & Rabin, 2001, p.37). For the remainder of the section, assume that an individual indeed maximizes lifetime welfare when $\delta=1$, though the discussion would remain the same if choosing some other constant.

To further simplify the exposition, and to bring the model to life, we also frame the decision regarding taking the stairs ($x=1$) versus the escalator ($x=0$) on our daily commute in terms of the model. Taking the stairs is costly; in the present moment we would much rather relax on an adjacent escalator. Yet, we know that our future health, and thus well-being will likely be higher if we do undergo the small cost of taking the stairs on a regular basis. Therefore, each time facing this decision the individual must evaluate the immediate cost of taking the stairs against the corresponding long-term and uncertain health benefits of doing so.

Present-bias:

One of the most documented deviations in human behavior from the rational economic agent is that we are often impatient. When contemplating future events, we tend to place greater weight on earlier events as they get closer to the present moment, violating the neo-classical assumption of time-consistency (O'Donoghue & Rabin, 1999). O'Donoghue and Rabin (1999) document and label this behavioral insight, 'present-bias'.

Consider again our commuter deciding whether or not to take the stairs each day. If the commuter has present-bias preferences, we can imagine them thinking to themselves on Monday: "tomorrow I will start taking those stairs", and on Tuesday: "tomorrow I will start taking those stairs", and on... Each day the present-bias commuter may earnestly want to start taking the stairs the following day, yet when tomorrow is realized – because they place a greater weight on the

present moment – the cost of taking the stairs outweighs any expected long-term benefits of future good health.

David Laibson's (1997) model of hyperbolic discounting attempts to describe this phenomenon more formally:

$$U(x) = u(x, 0) + \beta \sum_{t=0}^T u(x, t), \text{ where } 0 \leq \beta < 1. \quad (2)$$

Here, the β captures the reduced weight placed on **all** future outcomes relative to immediate ones, and a smaller β implies higher impatience on behalf of the decision maker. Deciding whether or not to take the stairs is a particularly interesting example to use when contemplating this model since the action of taking the stairs only once is unlikely to make a long-term difference; the commuter has to resolve not only to take the stairs that day, but virtually every day on their commute in order for them to achieve future health benefits. We can therefore empathise with the commuter who in the present moment neglects the option to take the stairs today in favour of tomorrow, especially when feeling hurried or tired.

This model highlights the difficulty traditional neo-classical models of intertemporal choice have in formalizing how large short-term psychic costs (as represented by β) of actions such as taking the stairs are compatible with individuals' corresponding desires for future good health and wellbeing. If we assume any realized costs of actually taking the stairs are small relative to the resulting health benefits of doing so, then to accommodate tendencies to procrastinate we have to place a very large weight on the immediate cost of the action relative to the same cost in the future. To do this would necessitate violating the neo-classical assumption of time-consistency

inherent in traditional models of intertemporal choice, highlighting an important conceptual distinction between traditional and behavioral models of intertemporal choice.

Interestingly, BIs such as present-bias are increasingly being grounded in neuroscience. There exists ample neurological evidence that the human brain treats decisions involving immediate consequences differently to ones that do not. Notably, McClure et al. (2007) reports students' brain activity during an experiment that tested how these students responded to decisions involving different time horizons. In the experiment, students arrived to a lab thirsty. These students were then asked to choose between having sips of juice/water at one of two specified times in the future. For instance, one of the choices involved choosing between one sip of refreshing juice in 20 minutes, or two in 25 minutes, and another choice was between one sip of juice now, or two sips of juice in five minutes.

Under the assumption of geometric (or no) discounting, these two choices are identical: in both cases, waiting an additional five minutes provides an extra sip of juice. Yet, the results from these two particular choices are markedly different. When deciding between one sip in 20 minutes and two sips in 25 minutes, roughly 70% of the students were willing to wait the extra five minutes for an additional sip of juice. In contrast, when deciding between one sip of juice immediately and two sips of juice in just five minutes time, only around 40% of the students elected to wait the additional five minutes for an extra sip of juice.

Furthermore, in addition to waiting up to 25 minutes for a sip of juice or water – and perhaps to the displeasure of the participants – the students were asked to make their decisions while in an MRI scanner, allowing the researchers to examine which areas of the students' brains were being stimulated during the decision making processes. The MRI scans indicated that the brain activity of the students when making the decision involving the distant sips of juice was

strongest in the prefrontal cortex (the area of the brain most associated with more complex decision making), whereas brain activity of the students when making the decision involving the opportunity to have an immediate sip of juice was strongest in the amygdala (an area of the brain associated with emotional responses).

While economists are not necessarily interested in the underlying mechanisms between causal interactions, grounding economic decision making processes in neuroscience can help better model the economic relationships they are interested in (Krajibich & Dean, 2015). Furthermore, as in this example of present-bias preferences, evidence from neuroscience can help ensure that one's postulates regarding human behavior are applicable across a variety of settings; neuroscience can provide a solid foundation for further economic investigation by refining our underlying assumptions about human behaviour.

Inattention:

While impatience may be a product of our neurological networks processing decisions involving immediate outcomes differently to those involving future ones, other sub-optimal economic behavior may result from our brain simply not paying attention. Sometimes we may overlook a decision because we are unaware it, or we discern (consciously or subconsciously) the cost of deliberating upon a decision to be too high relative to any benefits associated with the decision itself.⁷ Sub-optimal economic behavior may thus arise when particular options are not salient.

⁷ For an interesting attempt to incorporate these ideas into neo-classical theory, see (Woodford, 2012).

Xavier Gabaix (2015) incorporates this idea into the intertemporal model of utility maximization in a tractable manner:

$$U(x, y) = \sum_{t=0}^T u(mx, y, t) \text{ where } m \in (0,1). \quad (3)$$

In this model there are two possible actions: x and y . We assume that y is an outcome associated with an inherently salient decision, such as where to go after ascending either the stairs or the escalator. In contrast, assume that x is a decision that is unimportant relative to our final destination such as the commuter's decision itself. Specifically, the model places an attention weight, m , on the action x . In the extreme case when $m=0$, we just do not think about the action x as an option.⁸

This model can be related to the work of Daniel Kahneman, who in his book “Thinking, Fast and Slow” discusses how we tend to treat decisions of various complexities with two different cognitive ‘Systems.’ Building off the work of previous psychologists, Kahneman (2011) notes that we tend to make simple decisions (such as whether or not to take the escalator) automatically, and that these automatic decisions are conducted by our ‘System 1’, without much deliberate thought. This is in contrast to our ‘System 2’, which is preserved for more complex decisions, and which operates under our direct attention. That the decisions made by our ‘System 1’ are automatic, they tend to be determined by habits and heuristics. Thus, if our habits or heuristics do not align with

⁸ Notice here that the attention weight, m , is exogenous to the individual's utility function in equation 3), even though we consider it to be something that is determined (consciously or subconsciously) by the individual herself. With m being exogenous, it is thus possible for us to talk about the individual acting sub-optimally with respect to her true lifetime utility function, in which m would be endogenous and consequently set at an optimal level by the individual in each time period.

our long-term best interests, we may be unwittingly enacting sub-optimal economic behaviour; if we were forced to stop and consider the trade-off between taking the stairs or the escalator, we may act differently than if we were acting under the guidance of our heuristics.

Additionally, recent research by Sendhil Mullainathan and Eldar Shafir points to the fact that inattention to decisions involving trade-offs – including intertemporal ones – is exacerbated when individuals have less cognitive ‘bandwidth’ to devote to thinking about said decisions.⁹ They suggest that an individual’s bandwidth is particularly affected by stress (e.g. from money, time, or family), which in turn can be directly related to external factors such as poverty. Through this lens, stressful circumstances make it hard for us to contemplate decisions, forcing us to rely on heuristics and habits, which in turn may explain much non-rational economic behaviour.

Social-Identity:

Social-Psychologists often emphasize the enormous role social-identity plays in shaping preferences. They argue that questions like "what kind of person am I?" and “what are others like me doing?” serve as powerful reference points for deciding how to act. Akerlof and Kranton (2000) formalize this tendency in a simple theoretical model that incorporates into an individual's utility function a social identity function, in which deviations in one’s actions from their own reference group’s actions creates dissonance and declining utility. Here we combine a simplified version of this social identity function with Laibson’s model of present-bias preferences to highlight how

⁹ Mullainathan and Shafir (2013) use ‘bandwidth’ as an umbrella term to measure our “computational capacity, our ability to pay attention, to make good decisions, to stick with our plans, and to resist temptations.”

immediate social influences coupled with an over-emphasis of the present can have a very large impact on one's economic decisions. Formally, consider:

$$V(x) = u(x, t, \Omega(x, \bar{x}_g)) + \beta \sum_{t=1}^T u(x, t, \Omega(x, \bar{x}_g)), \quad (4)$$

where we define $\Omega(x, \bar{x}_g)$ as the social identity function which is a decreasing function of $|x - \bar{x}_g|$, and \bar{x}_g is the mean action performed by the individual's peer group. Individuals receive utility not only from how their own actions impact them directly, but from how those actions relate to what others in a group they identify with typically take or consider desirable.

If a present-bias individual discounts the future and cares a lot about how she fits in socially, what others around her are doing or what advice she gets from her group could be extremely important to her actions now, while having long-term, consequences later. For example, surrounded by co-workers that celebrate taking the stairs each day instead of the escalator can lead to long-term health benefits through a desire to share common social experiences.

Implications:

The behavioral economic models presented above, which all deviate from the one in which individuals maximize their true long-term welfare, suggest cost-effective opportunities for government policy to improve lives. They formally suggest many different ways in which governments can affect change without altering the chief costs and benefits of individuals' choice sets. They provide an economic lens to interpret the effectiveness – or lack thereof – of such policy

interventions, often incorporating practices from marketing and other consumer behavior driven fields of inquiry into a formal economic framework.

In this regard, we consider two broad types of government interventions. First, let us consider choice limiting interventions. By way of example, if we assume that taking the stairs as opposed to the escalator is in most people's long-term best interest, then a choice limiting intervention would be to ban the use of the escalator. Aside from not respecting the individuals for whom the escalator is clearly the better choice (e.g. a broken leg, or just finished a marathon), this intervention removes the choice of the escalator entirely. In addition to any moral considerations, as economists we are reluctant to impose choice constraints on individuals when trade-offs exist, especially when these trade-offs are not fully observed by the policy maker. This does not mean that bans or mandates do not occasionally serve a purpose in public policy (consider seat-belt use mandates), but improving individuals' behavior through such means usually comes at the expense of making other individuals worse off.

Consider instead choice preserving interventions, where particular actions by the individual are encouraged without removing the individual's liberty to choose alternative actions. Such choice preserving policy interventions typically prompt people to think of the benefits of a particular action, or make a particular action appear more appealing than the alternatives without actually altering any outcomes of the options available to the decision maker. Cass Sunstein uses an apt example of a GPS device in one's car to illustrate this idea. He notes that "A GPS steers people in a certain direction, but people are at liberty to select their own route instead" (Sunstein, 2014, p.2). It is these choice preserving policy interventions that Richard Thaler and Cass Sunstein termed as "Nudges."

However, one criticism often raised against the use of nudging in public policy is the potential for manipulation since individuals may not be aware that they are being encouraged to act in a particular manner. That nudges have the potential to encourage behavior that is in conflict with their own long-term interests further validates this concern. Yet, a potential way of assuaging this criticism is to make the use of the nudge public knowledge. For instance, Sunstein (2014) maintains that any official nudge should be transparent and open; if a nudge is openly subject to public scrutiny, the chances of manipulation are minimized.

In contrast, an argument defending the use of nudging in public policy is that organizations or policy makers cannot avoid nudging, regardless of their policy proposal; every policy intervention is embedded in a framework that is not directly considered part of the intervention itself. For example, when a new policy is introduced, it is often obliged to feature a default option. Behavioral economics just takes this one step further and carefully considers what this default option should be in order to maximize the welfare of the program's participants, given knowledge of cognitive and perceptual biases present in human behaviour.

Finally, and perhaps most importantly, the very fact that nudges do influence behavior may validate their use. It suggests that people do overreact to immediate circumstances and thus may deviate from the actions that are in accord with the standard intertemporal investment model. Given this discussion though, one thing is certain: nudges cross many different boundaries such as economics, politics, and ethics, and must be considered carefully before being implemented.

III. Interventions

In this section we present policies and pilot projects that are based, at least in-part, upon the models outlined in section II. We place an emphasis on Canadian interventions, and while our examples are not comprehensive, we believe they are representative of the initiatives currently underway in Canada. We focus on the following areas of public policy: Saving, Health, Education, Employment, and Taxation.

Saving:

One of the most well-known applications of behavioral economics concerns saving for retirement. When deciding how much to save, the standard economic investment model assumes that individuals are forward looking, able to forecast their needs, and face little difficulty following through with their plans. Several studies note, however, that the behavior of at least some people deviate from this model (e.g., Benartzi and Thaler, 2007). Many seem to recognize this and report feeling they are not saving enough. For instance, Choi et al. (2002) presents results from a survey at a large U.S. food corporation showing that, out of every 100 respondents, 68 believe their savings rate to be too low. Yet, of these 68 individuals only 24 plan to increase their savings rate in the coming months, and further still, only 3 of these 24 respondents actually do.

A very successful approach used to encourage more savings among workers is to change the default enrollment option in employer pension programs.¹⁰ When employees have to opt-in to their employer's pension plan, take-up tends to be much lower than when employees are enrolled

¹⁰ One cannot rule out the possibility of changes to other savings accounts negating any increase in savings induced by workplace pension enrollment. However, recent evidence from Canada suggests crowd-out rates from workplace pension plans may be significantly less than one on average; Messacar (2015) estimates that a \$1 increase in employer contributions to workplace pension plans crowd out private savings by \$0.50 on average.

automatically. This is especially true within the earlier years of employees' tenure at a firm.¹¹ Madrian and Shea (2001) document this phenomenon for a large U.S. company that introduced automatic enrollment into its 401(k) plan in 1998 (with the option to opt-out). The authors found that participation in the company's plan was 38 percent higher among employees who were automatically enrolled. Further, after accounting for the difference in tenure and demographic characteristics between the group prior to automatic enrollment, who could not join until one year of tenure at the firm, and the group after, who were automatically enrolled when they started working at the firm, the estimated comparable gap in participation rates increased to a remarkable 50%, showing the power that default enrollment options have on saving rates.

The results from this study are indicative of other, larger initiatives in retirement-saving plans the world over. Perhaps most notable is the UK's 2008 Pension Act. Concerned by declining saving rates among working adults, the UK phased in a requirement whereby employers are mandated to enroll their employees into a workplace pension plan (National Audit Office, 2015).¹² After becoming enrolled, employees can opt-out of their workplace pension plan, yet so far only between 8% and 14% have chosen to do so, leading to a huge increase in the number of private sector workers being enrolled in workplace pensions (Figure 1). The legislation is estimated to have encouraged an additional £6.6 billion into workplace pensions since its first two years of implementation, and this number is predicted to increase to between £14 billion and £16 billion by 2019-2020 (National Audit Office, 2015).

[Insert Figure I here]

¹¹ For a summary of the empirical literature surrounding this phenomenon, see Beshears et al. (2009).

¹² The minimum contribution rate for employers is currently 1% of each employee's salary, but is increasing to 2% in October 2017, and 3% in October 2018 (National Audit Office, 2015).

Motivated by similar concerns of undersaving, the Canadian government announced in June its plan to enhance the Canada Pension Plan (CPP) (Department of Finance Canada, 2016).¹³ The federal government is seeking to increase the CPP's replacement rate from 25 to 33.3%, and to expand the maximum amount of income subject to CPP contributions, from \$54,900 to \$82,700 (Department of Finance Canada, 2016 & Milligan, 2016). Support for the CPP enhancement has been buttressed by research suggesting that increases in workplace pension plans in Canada do not fully crowd-out private savings, and that such increases are more effective in raising saving rates among individuals with weaker saving histories (Messacar, 2015).

Another means to increase saving among working Canadians is to encourage the use of private workplace pension plans, whereby employers and employees contribute to a company fund.¹⁴ An immediate response to this goal is to mandate automatic enrollment into workplace plans, as has occurred in the UK. However, in Canada, there are currently legislative barriers to imposing an opt-out default policy for workplace pension plans (Palameta, Vincent, & Voyer, 2011). One alternative approach to encourage participation is to ensure every employee makes an affirmative choice between whether or not to enroll in any such program. Not choosing is not an option. This approach necessarily makes the decision more salient, discouraging the use of heuristics and combatting tendencies to procrastinate. Such choices have been termed 'active choices' or 'active decisions' within the behavioral economics literature.

Carrol et al. (2009) demonstrates the effectiveness of 'active choice' in promoting participation in workplace pension plans. The authors analysed a large financial services firm that

¹³ Many studies have analysed undersaving in Canada. See, for example, Wolfson (2011) and Moore et al. (2010).

¹⁴ Prior to the announcement by the federal government that they are to work on enhancing the CPP, the Ontario government sought to mandate enrollment into workplace pension plans, through the Ontario Retirement Pension Plan (ORPP).

changed its 401(k) enrollment policy. Prior to November 1997, new hires to this firm were required to submit a form indicating their 401(k) enrollment preference. In contrast, after November 1997, new hires did not receive this form but were instead given a toll-free phone number to call if they wanted to enroll in the firm's plan. The former enrollment process required employees to make an active choice between either being enrolled in the plan or not, whereas the latter enrollment process assumed a default of non-enrollment. The authors show that after three months of employment, participation rates were 28 percentage points higher among employees hired prior to November 1997 (those who had to make an active choice), and that this gap persisted between for at least 42 months after being hired.

The goal of Canadian policy makers to increase saving rates is not limited to retirement-saving either. The Canadian government is actively encouraging families to save more for their children's future education. As part of the Registered Education Savings Plan (RESP) (a tax-deferred savings account for post-secondary education), the federal government offers low-income families up to \$2,000 in the form of a grant, called the Canada Learning Bond (CLB). However, despite no minimum contribution needed to receive the grant, it is estimated that in 2008 only 16% of eligible households had claimed their CLB (Nayar Consulting, 2013).

A lack of awareness of the RESP as well as the complexity of its sign-up process contribute to these low participation rates (Nayar Consulting, 2013 and Milligan, 2002).¹⁵ For example, parents are required to apply for and provide a Social Insurance Number for their children and meet with a private bank representative to process a lengthy application. Here, seemingly

¹⁵ Another potential contributor to these low take-up rates is that when the CLB was introduced in 2004, only children born after the introduction of the policy were eligible for the grant. Since many parents may consider saving for their children's education more seriously when their children are above the age of four, this feature of the program may have inadvertently contributed to the low take-up rates recorded in 2008.

innocuous up-front costs may be unintentionally affecting individuals' propensity to take actions that are in accord with their long-term best interest. Working with these setup constraints, the Omega Foundation established a national program called SmartSAVER that encourages eligible families to claim the CLB by simplifying the application process and placing more onus on banks to complete the eligibility process. To do this, SmartSAVER first collaborates with both private and public organizations to promote awareness of the CLB and RESP through numerous marketing schemes. Second, it simplifies the RESP application process by taking applicants through an online application with five simple steps (figure II). Third, upon completing the online application, an experienced bank representative contacts the potential client to arrange an appointment and finalise registration, further simplifying the enrollment process by turning the onus upon the financial institution to complete the application (Kenter, 2015).

Throughout the pilot project in Toronto, CLB take-up rates increased from 27.7% in 2009 to 39.3% in 2012 (Nayar Consulting, 2013). Yet, there remains a wide disparity in CLB take-up rates across regions in Canada, signalling potential for improvement; take-up rates are as low as 1% in areas of Manitoba, and as high as 48% in regions of Toronto, where the initiative first began (SmartSaver, 2014). Government 'Nudge Units' such as Ontario's Behavioural Insights Unit and the Privy Council's Innovation Hub are currently exploring ways to simplify the CLB take-up process, which may require coordination with the Canada Revenue Agency to help verify low-income status. A system by which Canadian newborn and landed immigrant children are automatically enrolled in an RESP, with regular updates sent to parents and easy ways to deposit, would circumvent many issues related to the program's salience and enrollment process. In the meantime, the Omega Foundation's 'SmartSAVER' program provides a good example for how an

organization can help encourage greater take-up of public services while working with existing legal and procedural constraints.

[Insert Figure II here]

Health:

There is a long waiting list for organ donors in many countries, including Canada (Shimazono, 2007 & Canadian Institute for Health Information, 2016). In 2014, for example, 278 Canadians died while waiting for an organ transplant (Canadian Institute for Health Information, 2016). Survey evidence from Ontario suggests a majority of citizens are willing to register as donors, but only 29% of those eligible are actually registered (Trillium Gift of Life Network, 2016). Our models from behavioral economics suggest that the upfront discomfort from thinking about donating (in case of death) may prevent lives from being saved, or that the act of donating simply is not a salient option for consideration. One policy tool often used to combat these potentialities is ‘presumed consent’. Individuals residing in countries with a policy of presumed consent are automatically registered as organ donors and have to purposefully opt-out of this default position if they decide against being a donor. Many studies, including Johnson and Goldstein (2003), have shown that organ donation consent rates are much higher in countries with policies of presumed consent than those without (figure III).

[Insert Figure III here]

Efforts to increase organ donation consent rates have also occurred in Canada within the province of Ontario. Yet, though a policy of presumed consent is likely to increase consent rates, a survey conducted by the market research firm Ipsos shows that the large majority of Ontarians do not favour such a system; Ontarians appear to view organ donation as a personal choice and

prefer the current opt-in default (Trillium Gift of Life Network, 2015). In fact, Ontario's opt-in default policy is situated within a prompted-choice system: when conducting a health card, driver's licence, or photo card transaction at a ServiceOntario centre, Ontarians are asked by a customer service representative whether they would like to register as a donor.¹⁶

Conscious of the possibility of behavioral barriers affecting donation rates, Ontario's recently established Behavioural Insights Unit, in collaboration with the Behavioural Economics in Action at Rotman Centre (BEAR), partnered with the Trillium Gift of Life Network, Ontario's Ministry of Health and Long Term Care, and the Ministry of Government and Consumer Services to test various interventions aimed at increasing consent rates within the confinements of the province's prompted-choice system. The interventions focussed on increasing the salience of the long-term benefits, the simplicity of the registration process by altering the registration form itself (figure IV), and the time at which potential donors received the registration form during their visit to a ServiceOntario centre.¹⁷ To determine the most effective registration process, these interventions were trialed across six different treatment periods at a single ServiceOntario centre, and the results from the treatment periods were compared to a control period at that same ServiceOntario centre (Treasury Board Secretariat, 2016 & Robitaille et al., 2016).

[Insert Figure IV here]

On average, organ donation rates for individuals assigned to any one of the treatments increased by up to 143%. The most persuasive nudge statements asked potential donors to imagine herself or a loved one needing an organ donation. And as a consequence of these results, the most

¹⁶ Ontarians can also register to be a donor online, but only 15% of registrants do so (Treasury Board Secretariat, 2016 & Robitaille et al., 2016).

¹⁷ There were four such variations of the registration form, each including a different nudge statement. One of the treatments also included a brochure including information pertaining to organ donations.

effective organ donation registration form has been adopted across all ServiceOntario Centres as of June 2016 (Treasury Board Secretariat, 2016 & Robitaille et al., 2016).

Another public health issue that has been of interest to governments in Canada is influenza vaccination rates. This is because each year an average of 3,500 Canadian residents die from influenza (Gionet, 2015). For most provinces and territories in Canada, influenza vaccination rates increased between 2003 and 2013-2014 (Gionet, 2015). However, in Ontario the opposite is true: the vaccination rate decreased from 38% in 2003 to 34% in 2013-2014 (Gionet, 2015). One factor that may be in part responsible for the lower vaccination rates in Ontario over this period is that unlike most other provinces and territories in Canada, until late 2012, it was illegal for pharmacists to administer the influenza vaccine (Canadian Pharmacists Association, 2012). By introducing legislation in 2012 that allowed pharmacists in Ontario to administer the influenza vaccine, the Ontario government made it more convenient for individuals to receive the vaccine, reducing the up-front costs for the recipients.

The change in Ontario's legislation is in accord with other efforts and research the world over to make flu shots more convenient and more salient.¹⁸ Notably, Milkman et al. (2011) reports the results of a field experiment at a large U.S. firm that tested to see how prompting employees to write down the date and/or time of their respective free on-site influenza clinic affected vaccination rates. For this field experiment, all employees at the firm received an email informing them of their respective on-site vaccination clinic. In the email, some employees were also prompted either to write down the date or to write down the date and time of their vaccination clinic. Vaccination rates between these three groups differed meaningfully, with those receiving

¹⁸ See Chen and Stevens (2016) for a discussion on using behavioural economics to increase vaccination rates, as well as Corace et al. (2016) for a review of different methods used to increase vaccination rates among healthcare workers.

the prompt to write down both the date and time of their respective clinic having a 4.2 percentage points higher vaccination rate.

Education:

A discipline that has received less attention from behavioral economists is education, despite the fact that youth, with their developing brains, are particularly predisposed to inattention and present-bias (Levecchia, Liu, & Oreopoulos, Forthcoming). The research area is growing, however, and there have been increasing attempts to nudge children and their parents toward decisions that promote education attainment and academic performance.

We first examine an intervention that simplified the submission of the U.S. Free Application for Federal Student Aid (FAFSA) form. All college and university students in the United States must complete the FAFSA in order to receive public financial assistance. The application process itself, however, is not straightforward, especially for students left on their own to navigate through it. Students must learn how to access the form and collect the information needed complete it, including information about parents' Social Security Numbers, exact income reported on their most recent tax files, vehicle ownership, and other assets. Concerns regarding the complexity and inconvenience of filing the FAFSA have prompted calls to amend the process (ACSFA, 2005 & Dynarski and Scott-Clayton, 2006). To explore how much difference application simplification could make, Bettinger et al. (2012) conducted a field experiment in conjunction with H&R Block, known as the FAFSA study.

The FAFSA study identified eligible parents visiting H&R Block with children in their senior year at high school.¹⁹ After agreeing to participate in the experiment, parents were

¹⁹ The study also found college enrollment effects for a separate sample of individuals visiting H&R Block with not more than a high school education and who were offered FAFSA completion assistance for themselves.

designated into one of two treatment groups and a control group. Individuals in the first treatment group (the 'Information Treatment') were provided with an estimate of the amount of financial aid their children could obtain from completing the FAFSA, along with information about tuition costs at four nearby colleges. Parents in the second treatment group (the 'Personal Assistance Treatment') were provided the same information as those in the Information Treatment and also offered direct assistance with completing the application. Since many of the questions to complete the FAFSA form are the same as those asked on the tax form, the assistance took roughly 8 extra minutes in the H&R Block office.

As can be seen in figure IV, personal assistance in the FAFSA application process had a considerable impact on both the FAFSA submission rates and the propensity for individuals to attend postsecondary. High school seniors with parents receiving the FAFSA application assistance had FAFSA filing rates 16 percentage points higher than the control group (56 versus 40 percent). The assistance would have increased rates even more if the FAFSA did not require the students' signature. Instead, H&R Block sent the complete, or near complete FAFSA home first, with a pre-paid envelope and instructions for the student to sign and mail to the Department of Education. Still, when looking at enrollment effects, those from the assistance group were 8 percentage points more likely to attend a postsecondary institution than those from the control. The study also found similar affects for attending at least two years of college, even though the treatment helped with entry for only the first year. Interestingly, receiving information pertaining to the amount of financial aid one is likely to receive as well as the cost of nearby colleges, had no significant effect on FAFSA applications or postsecondary enrollment. Information on its own was not enough to change behaviour. The study demonstrates a nudge with personal interaction may be more effective (yet more costly) - a result we return to below.

[Insert Figure V here]

Applying for financial aid is just one step of many that must be taken to attend college or university. When transitioning to postsecondary education, students must also determine which schools and programs to apply to, pay application fees, make additional financial arrangements, and modify their daily routine – all of which can pose barriers to those not familiar with the process. To help overcome these, Oreopoulos and Ford (2016) develop a program called 'LifeAfterHighSchool', that integrates both program and financial aid application assistance into the grade 12 curriculum at low-transition high-schools in Ontario.²⁰ The program provides all high school seniors with in-class assistance, regardless of their current postsecondary plans. The slogan of the program is 'Keep Your Options Open'. Even for students not intending to continue their education, an offer of acceptance from a program that students themselves helped choose, plus a financial aid package, makes the postsecondary option last longer and makes it more salient. The bridge to postsecondary becomes an easier one to take. The program also keeps students' immediate costs down by offering assistance during class and covering the application fees.

LifeAfterHighSchool, was supported by the Ontario Ministry of Training, Colleges, and Universities (MTCU) in partnership with the Ministry of Education (MOE). The program consisted of three hour-long workshops whereby graduating seniors were guided through the college and financial aid application processes. The first workshop encouraged students to consider local postsecondary programs that they could get into based on their high school grades, as well as provided a simple financial aid calculator to demonstrate how they can afford to attend. The second workshop had students apply for real to colleges or universities, with the application fees

²⁰ Low transition schools are schools with roughly less than half of its graduating seniors enrolling in postsecondary education the following year.

covered from cutting and pasting the application number to the LifeAfterHighSchool website. The third workshop helped students open and get started on the Ontario Student Assistance Program application and send follow-up emails and letters to parents with instructions to complete the task. During these workshops, either external facilitators or teachers trained in the application processes were also available to help the students if they required it.

For students at low-transition schools that were randomly provided LifeAfterHighSchool, postsecondary application rates increased from 64 to 78 percent, while enrollment increased the following school year by 5 percentage points, with the greatest impact for students who were not taking any university-track courses in their last year of high school (a 9 percentage point increase in enrollment for them). The experiment provides a good example of collaboration between policy makers, academics, and evaluators to produce evidence for whether a new program might be worth scaling up.

[Insert Figure VI here]

Our last example concerns the role that social support has in educational achievement. It comes from a forthcoming paper, Oreopoulos and Petronijevic (2016), which reports results from a field experiment involving first year economics students at one of the University of Toronto's satellite campuses in Mississauga. In this study, students were randomized into a control group or one of two treatment groups in which students received additional support and encouragement. Students in the first treatment group received weekly email and text messages throughout the academic year, designed to provide information, support, tips, and encouragement in their academic endeavours. Students were also able to respond to these messages and ask questions themselves. Students from the second treatment group received support from personal coaches - academically successful and keen upper-year undergraduate coach who were responsible for

meeting with their assigned students at least once per week, and instructed to engage with their coachees throughout the year in person, by text, email, or skype to respond regularly to their academic struggles and questions.

Students from the first treatment group finished the school year with an average economics' grade 1.5 percentage points higher than students in the control group. And, students from the second treatment group finished the school year with an average 6 percentage points higher than students in the control group. These results, while promising, highlight an interesting potential trade-off between the effectiveness of interventions in social support and the cost/intensity of such interventions. The intervention involving a personal coach had a much greater impact on individuals' academic performance, but involved a larger time cost on behalf of the coaches. Coaches could only help about 7 students with 10 hours of work per week. In comparison, the intervention involving supportive text and email messages had a much smaller effect on individuals' academic performance, but had a marginal cost close to zero.

Employment:

Another transition that behavioral economists consider closely is the transition from unemployment to employment. As with the transition from high-school to postsecondary, interventions incorporating insights from behavioral economics have tended to focus on making the process simpler, more salient, and easier to follow. Currently, interventions to this effect are underway in Canada. We present three of them by the Federal Ministry of Employment and Social Development (ESDC), and the Social Research and Demonstration Corporation (SRDC).

Additionally, by presenting these interventions, we distinguish between what have been termed ‘low-touch’ and ‘high-touch’ nudges.

We first consider two pilot projects organized by ESDC's 'Innovation Lab' that sought to increase the use of a new initiative known as ‘Job Match’ (JM). JM is an employment service that both employers and job seekers can access through ESDC’s ‘Job Bank’ (JB) database.²¹ The employer details the education, skills, and experience required for the job and JM uses an algorithm to match job seekers based on these characteristics. However, in order for the JM service to work, job seekers are required to input their skills, education, and experience into the system (Parent & Audet, 2016).

Enrolling in Job Match requires: 1) registering an account on the Job Bank website; 2) clicking on the 'Sign up to Job Match' hyperlink; and, 3) uploading relevant skills, education, and experience - a process that can take more than 20 minutes. Many individuals with JB accounts do not initiate the JM enrollment process, and of those who do, some do not provide all of the requested information and thereby fail to complete their account. ESDC cites behavioral barriers such as inattention to the JM option, inertia with having to take 20 minutes to enroll, and discounting uncertain, long-run benefits from sign-up as possible explanations for the low take-up rates (Parent & Audet, 2016). It is with the stated goal of increasing account completion rates to allow the JM service to facilitate more rapid job matches that the ESDC conducted the two pilot projects.

In the first pilot project we discuss, ESDC trialed five different designs of a web-link that directed web-surfers from the JB database to the JM service webpage (figure VII) (Parent & Audet,

²¹ The Job Bank is a federally administered database that hosts searchable job listings from employers across Canada, delivered by ESDC.

2016). The web-links were designed to compel more JB browsers to click-through to the JM webpage, and consequently enroll in the JM service. Three of the five web-link designs included a different “nudge” statement, each drawing inspiration from one of three behavioral economic principles: developing social norms, priming/salience, and framing.²² The web-link designs were then trialed on a weekly rotation over four and a half months, allowing each of the five designs to be measured for a total of three to four weeks.²³ To assess the relative success of each web-link design, there were three outcomes of interest: 1) the rate at which web-surfers on the JB database clicked through to the JM service webpage; 2) the number of web-surfers who started to create a JM account; and 3) the number of new complete JM accounts.

[Insert figure VII here]

Using google analytics, ESDC estimates that the most effective web-link design – framing (design 4) – may have been responsible for 15% of new JM accounts during the weeks it was trialed (Parent & Audet, 2016). This was estimated by measuring the increase in the proportion of JB web-browsers completing a JM account when presented with the ‘framing’ web-link design, relative to web-browsers in the control weeks. Similarly, the nudge statements that either primed the job-seeker to consider the benefits of the JM service (design 5), or conveyed a social norm surrounding the use of the JM service (design 3), are also estimated to have had comparable effects. However, the ‘call to action’ web-link design, which only focussed on the salience of the web-link and did not include any accompanying nudge statement, was less than half as effective as the other web-link designs in encouraging job-seekers to create a JM account (Parent & Audet, 2016). The results of this pilot project demonstrates how small tweaks to modes of communication can

²² For a detailed explanation of these behavioural economic principles, see Samson et al. (2015).

²³ A randomised control trial was not feasible given the nature of the JB and JM website platforms, and thus, weekly rotations of the web-link designs were the next best alternative.

substantially affect individuals' decisions. Moreover, because of this pilot project, ESDC has made the 'framing' web-link design permanent – a policy intervention that was not self-evident prior to the experiment.

To the same end, ESDC conducted another similar pilot project, this time sending emails to Canadians who had started their JM account but had not completed it. These emails contained a link to the JM application page, encouraging recipients to complete their JM account. Because the experimenters could customize the emails sent to individual recipients they were able to implement a randomized control trial (RCT) design, testing the effectiveness of different links in compelling job-seekers to complete their JM account. By monitoring the sent emails, the experimenters contrasted the rate at which email recipients clicked on the different email-links and the corresponding probability they completed their JM account.

Throughout the study, four treatment emails and one control email were monitored, and among the treatment emails, four different behavioral economic principles were employed.²⁴ Although the overall effectiveness of the emails was modest (a 5% increase in account completion), there was a profound difference in the click-through rates between those who received the control email and those who received the treatment emails.²⁵ On average, the recipients receiving emails including nudge statements were 77% more likely to click on the JM link than those who received the control email. Again, this pilot project demonstrates how small tweaks to an intervention can make a meaningful difference on the take-up rate of programs, and

²⁴ The nudge statements either, 1) framed the decision to complete the JM profile in terms of its benefits on the recipients' employment prospects; 2) attempted to build a sense of commitment on behalf of the recipients by highlighting how far they had already gone in setting up their JM account; 3) inculcate a social norm by informing the recipients how many Canadians had completed their JM account; or 4) make the email link especially salient.

²⁵ The click through rate is the percentage of email recipients who clicked on the emails links, directing them to the JM website.

thus on individuals' long-term wellbeing. Both pilot projects by the ESDC show how policy makers can regularly test different designs and communication approaches based on behavioral economics to discover what methods work best.

These interventions by the ESDC are a good example of what are termed 'low-touch' nudges; the interventions involved small tweaks in modes of communication for the job seeker. More generally, low-touch nudges are often cheaper to implement and focus on making decisions more salient and simpler for the individual. This is in contrast to 'high-touch' nudges, which involve significant changes to one's environment and often include personal interaction.

An example of a high-touch nudge is the application of motivational interviewing (MI). MI is a unique style of interviewing that is client-centered and explorative; interviewees are encouraged to consider and develop resolutions to problems themselves (Ford et al., 2014). One particularly distinct feature of MI is the assumption that interviewees each possess an intrinsic capacity to affect positive change. MI then attempts to engender such change by encouraging interviewees to realise this capacity, and to develop plans that achieve their desired goals (Ford et al., 2014).²⁶ Here in Canada, MI has been trialed as a means to assist the transition to employment.

Working with funding from the Manitoba government, Canada's Social Research and Demonstration Corporation (SRDC) piloted MI among a sample of Employment and Income Assistance (EIA) recipients in Winnipeg, Manitoba, from March 2015 to March 2016 (Palamar et al., 2016). In the pilot project, 1,113 EIA recipients were assigned – at the EIA office level – to either a treatment group in which participants partook in MI with their caseworkers, or a control

²⁶ For more information on motivational interviewing, see Miller and Rollnick (2002).

group in which participants did not.^{27, 28} These treatment and control groups were comprised of 13 Winnipeg EIA offices, in which each office's caseworkers either received MI training or did not (Palamar et al., 2016). During the pilot project, EIA recipients received otherwise regular counselling from their caseworkers. Thus, under the assumption that aside from partaking in MI the clients in the treatment offices were otherwise identical to those in the control offices, and that there were no other factors common to each of the two groups of offices, the experimental design allows for unbiased comparisons between EIA recipients who received MI, and EIA recipients who did not.

In this pilot project there were three key outcomes of interest: 1) EIA exit – the probability participants continued to receive EIA benefits; 2) Employment service usage – the probability participants started to receive employment services one month or more after the commencement of the pilot project; and, 3) Pursuit of goals – the amount of progress participants made towards achieving goals which they specified prior to the initiation of the pilot project (Palamar et al., 2016).²⁹ Most notably, Palamar et al. (2016) finds that participants who were in offices with caseworkers trained in MI were significantly more likely to exit EIA than participants in offices with caseworkers who did not receive MI training; 9 to 12 months after enrolment in the pilot project, participants in the treatment group were 6.8 percentage points more likely than participants

²⁷ Participants in the control group received intentional practice (IP) whereby their caseworkers were encouraged to have deliberate conversations with the participants to help them reach their goals, but the caseworkers were not directed on how these conversations were to occur.

²⁸ 5 EIA offices' caseworkers' received MI training, and 6 EIA offices' caseworkers' did not. Further, historical statistics from the EIA offices were used to ensure similar client characteristics across both the control and treatment offices. Palamar et al. (2016) also reports that the baseline characteristics of the clients were very similar across the two sets of offices, and they record adjusted versions of their estimates accounting for the slight differences in baseline characteristics between the treatment and control offices. Palamar et al. (2016) finds that results were very similar across both the adjusted and unadjusted estimates, and hence only report the unadjusted version of their estimates.

²⁹ Prior to the pilot project, all participants were asked to identify specific steps they wanted to take, and these steps were categorized into 9 separate goal types, ranging from language to educational goals.

in the control group to exit EIA (Palamar et al., 2016). Figure VIII shows how the difference in EIA exit rates manifested itself over time. Similarly, MI had a positive impact on participants' progress toward reaching their pre-specified goals.³⁰ However, no identifiable impact of MI on employment service usage was observed between the initiation of the pilot project and November 2015 – 8 months after the first EIA clients were enrolled in the project.

[Insert figure VIII here]

To put these results in context, Palamar et al. (2016) estimates the net-benefit of the pilot project to be \$405 per program participant. This figure is driven by reduced EIA payments to those in the treatment group relative to those in the control group. Furthermore, this estimate was constructed using only the difference in EIA payments over the pilot project period, and does not account for the fact that differences in EIA receipt likely continued after the end of the pilot project. Palamar et al. (2016) thus concludes that MI has a significant positive impact on EIA and other indicators of goal attainment for many clients, and further recommends that the training of MI be extended to all EIA client-facing staff (Palamar et al., 2016).

Yet, the remarkable success of this project masks one important feature of high-touch nudges such as MI: it is far more difficult to implement and evaluate high-touch nudges than low-touch nudges. High-touch nudges are necessarily more involved than low-touch nudges, tend to be more expensive, and are thus harder to trial on a wider scale, making it difficult to attain definitive results. This is perhaps best evinced by the fact that this particular pilot project acted as

³⁰ Palamar et al. (2016) reports that participants in the treatment offices were 3.3 percentage points more likely to make progress toward reaching their goals as specified by the participants prior to undergoing MI (Palamar et al., 2016).

a follow-up to a previous intervention by SRDC that did not find conclusive evidence that MI affected participants' propensity to become re-employed.

Ford et al. (2014) report on this initial pilot project that involved a sample of 155 long-term Income Assistance (IA) recipients in British Columbia. As with the aforementioned MI pilot project in Winnipeg, these long-term IA recipients were assigned to either a control group that underwent regular employment counselling or a treatment group that received employment counselling from caseworkers trained in MI. Notably, Ford et al. (2014) report that the program was "inconclusive with respect to its impacts" (Ford et al., 2014, p.4). Here, the small sample size constrained the power of the experiment, necessitating the follow-up study to clarify the potential effects of MI on re-employment rates. Since pilot projects involving high-touch nudges are often expensive and time consuming to administer there is potentially large costs to trialing interventions large enough to effectively evaluate.

Taxation:

Our last example of the application of behavioral economics to public policy is in the domain of taxation. This is an area that has received a lot of attention from behavioral economists, signalling the potential for incorporating behavioral economic insights into tax policy design. Researchers have shown that the salience of tax rates, the ease of tax compliance, and the framing of tax policy more broadly, all matter in determining our economic behavior (e.g. Chetty et al. (2009), Chetty et al. (2013), Hallsworth et al. (2014)).

Perhaps the most notable behavioral economic interventions in tax policy concern tax compliance. Traditional policies to increase tax compliance typically include placing an economic

cost – such as a fee – on non-compliance, but audits and legal enforcement are often expensive to carry out. Yet, alternate policies based on findings from behavioral economics can achieve marked improvements on compliance rates at relatively low costs. For instance, in the UK, there have been field experiments showing that altering the wording on late-payment notices emphasising high tax compliance among local residents are much more effective in encouraging people to submit their taxes than regular late notices (Behavioral Insights Team, 2011). Further, simple and personalised text message reminders encouraging people to pay fines on time were effective in raising on-time payments during another UK field experiment (Behavioral Insights Team, 2011).

Inspired by the work of the UK's BIT, the Canada Revenue Agency has also conducted similar experiments. In doing so, the Canada Revenue Agency has become a prominent exemplar for using RCTs in policy work. For instance, the Canada Revenue Agency has experimented with nudge statements in its letters encouraging compliance with Tax Free Saving Account rules, tested the effectiveness of highlighting social norms in tax-collection letters, and trialed different messaging techniques encouraging the disclosure of unreported income by workers in a sub-sector with higher-than-usual underground economic activity (Canada Revenue Agency, 2014, 2015, & Dutil and Mackey, 2016).

A particularly interesting recent experiment by the Canada Revenue Agency involves changing the signature block on the personal version of personal income tax returns, where tax filers attest to the accuracy of the information they submit. The experiment involves moving the signature block from the end of the form to its beginning. The text is also enlarged, the wording surrounding the block simplified, the warning for providing inaccurate information bolded, and tax filers are asked to print their name besides their signature (figure VIII). The rationalisation

behind this experiment proceeds from previous research suggesting people are more likely to be truthful *after* they are prompted to think about honesty (e.g. Shu et al., 2012).

[Insert Figure IX here]

To evaluate the effectiveness of this intervention, paper tax returns containing the altered signature block were distributed in two Canadian cities. The Canada Revenue Agency is currently analysing the tax returns from these two cities, checking to see how they differ between the treatment group and a control group comprised of tax filers who filled out the regular tax returns with special attention paid to parts of the return that are susceptible to dishonest disclosure by individuals. Pending differences between the treatment and control groups, we may see this intervention rolled-out extensively in the future.

We think that this intervention is an especially nice one to finish with. It is a quintessential example of how incorporating findings from research in behavioral economics into public policy can suggest policy changes that are very cheap and have the potential to affect dramatic change. Even if altering the signature block compels a moderate increase in per person tax revenue, this costless intervention could garner substantial savings for the government.

IV.

Over the past decade there has been a tremendous rise in the application of behavioral economics to public policy. This rise is a direct result of the purposeful development of governmental agencies dedicated to incorporating findings from behavioral economics into public policy. Most formative in the proliferation of these governmental agencies was the establishment of the UK's Behavioural Insights Team (BIT). After witnessing successful and low cost public

policy interventions by the BIT, governments from around the world have sought to construct their own such agencies (Whitehead et al., 2014). That governments the world over have looked upon the UK's BIT for inspiration is evinced by the active consulting role the BIT has played to many of these governments.³¹

The Economic and Social Research Council (ESRC) estimates that at least 51 countries have initiated some type of centrally administered agency designed to promote the use of behavioral economics in public policy (Whitehead et al., 2014). Aside from the BIT, the most notable federal-level agency promoting the use of behavioral economics in public policy is the U.S.'s Social and Behavioral Sciences Team (SBST). Established in 2014, and buttressed by a recent presidential executive order to encourage the use of behavioral economics in public policy, the SBST seeks to integrate findings from behavioral economics into federal government programs (SBST, 2015).³² Since the first two years of its inception, the SBST has worked on a plethora of projects, ranging from promoting workplace savings among Federal employees through an email campaign, to encouraging truthful disclosure of self-reported sales of goods and services to the government, by simply including a signature box on the top of an online data-entry form (SBST, 2015).

Many sub-national governments have also established similar agencies. For example, in 2012, Australia's New South Wales (NSW) government started a partnership with the UK's BIT that resulted in the establishment of its own Behavioural Insights Unit (NSW Behavioural Insights Unit, 2014). NSW's Behavioural Insights Unit runs its own trials and interventions as well as

³¹ The UK's BIT has international offices in New York and Sydney, and it has collaborated with and consulted for various federal and provincial/state governments – see, for example: <http://www.behaviouralinsights.co.uk/who-we-work-with/> and <http://www.behaviouralinsights.co.uk/behavioural-insights-team-australia/>.

³² In September, 2015, President Obama enacted an [Executive Order](#) encouraging the use of behavioural sciences to inform policy decisions across government departments.

supports other NSW government initiatives. Notably, one of the NSW's Behavioral Insight Unit's stated goals is to "contribute to the global body of BI evidence" (NSW Behavioural Insights Unit, 2014). This stated goal highlights an interesting feature typical to such governmental agencies: many of the trials and interventions conducted by agencies such as NSW's Behavioural Insights Unit are publicly documented, promoting the dissemination and use of effective policy interventions the world over.

There are also non-governmental initiatives and agencies dedicated to integrating behavioral economics into public policy. At the trans-national level, the most notable is perhaps the World Bank's Global INsights Initiative (GINI). Launched in 2015 the GINI consults to government clients and assists various World Bank teams in implementing and evaluating projects that utilise behavioral insights (The World Bank, 2016). Additionally, many international development organizations such as USAID, AusAID, UNICEF, and the WHO have also started to apply findings from behavioral economics into their practices (Whitehead et al., 2014).

To the same end, many private-sector consulting groups and demonstration corporations have worked closely with government entities. For instance, here in Canada, BEWorks – a Toronto based behavioral economics consulting group – partnered with the Ontario Energy Board to investigate methods to promote energy conservation among its clients (BEworks, 2014). Other organizations such as Deloitte and the University of Toronto's 'Behavioural Economics in Action at Rotman' research centre have also conducted work in similar contexts.

As is evident from the examples in the previous section, Canada is no exception to the international trend in applying findings from behavioral economics to public policy. At the federal level, the Privy Council Office established its own Innovation Hub in 2015 with the goal of acting as a resource to other federal departments that seek to "adopt new and innovative approaches to

solving complex policy, programming and service delivery challenges” (Privy Council Office, 2016). Among the Innovation Hub’s stated areas of expertise is the use of behavioral economics. They presently have a number of projects completed and underway, with published results expected in early 2017. In addition, the Innovation Hub has been involved in supporting the Public Health Agency of Canada (PHAC) on an interesting project focussed on expanding the use of a mobile phone application called ‘Carrot Rewards’. The Carrot Rewards application seeks to promote healthy living by offering users of the application loyalty points from the loyalty-points provider of their choice if they undergo what is deemed to be healthy and/or educational activities (British Columbia Ministry of Health, 2016). First implemented in March, 2016, in British Columbia, and currently being expanded by PHAC, the Carrots Reward mobile application is an example of how the government can potentially motivate healthy behavior on a large scale.

As discussed in the previous section, the Canada Revenue Agency is enthusiastically incorporating behavioral economics into its design of tax and benefits administration policy. While the Canada Revenue Agency has historically sought to improve tax compliance through various initiatives, it has started through its innovation lab to implement more broadly pilot projects that make explicit use of findings from within the behavioral economics literature. Furthermore, these pilot projects tend to be in the form of RCTs, allowing for rigorous comparisons of alternative nudges. The pilot projects range from trialing automated telephone messages reminding employers to submit their payroll and sales taxes, to the aforementioned signature block experiment. The work being conducted by the Canada Revenue Agency is very exciting; since most citizens interact with the agency in one way or another, just tweaking certain aspects of these interactions has the potential to garner tremendous savings for the government.

Another very recent development at the federal level is the establishment of ESDC's Innovation Lab. Launched in April 2015, ESDC established its Innovation Lab, with a mandate to find innovative solutions to service delivery challenges, while promoting greater integration between policy, program and service delivery. The Lab brings together key partners across ESDC and outside the department, right from the outset, to develop new thinking on ESDC's most pressing problems and to foster sustainable solutions that are responsive to the changing needs of Canadians. The Lab creates space and provides expertise in facilitation and design thinking, to apply and test new methods, to prototype and quickly learn what works and what does not, and to de-risk experimentation by putting both ideas and processes through iterative testing with clients.

Since its opening, ESDC's Innovation Lab has focused on organizational development, scoping and designing projects, engaging employees, and acting as a catalyst for innovation within the department. The Lab has benefitted from external advice such as from the Mind Lab in Denmark as it establishes the fundamentals of a design-lab organization including governance, evaluation, communications engagement, and project development. The Lab's first official project is to make the online application for the CPP the premier method for Canadians applying to the country's pension plan.

In Ontario's 2015 Budget, the province officially announced the establishment of its Behavioural Insights Unit, specifically citing the success of other countries such as the UK in implementing similar agencies (Ministry of Finance, 2015). The Behavioural Insights Unit operates within Ontario's Treasury Board Secretariat and works with various ministries and agencies to develop services that take into consideration findings from behavioral economics. Despite the relatively quiet announcement proclaiming its establishment – only capturing half a page of the Ontario Budget's 426 pages – since its inauguration, the Behavioural Insights Unit has

published the results of three completed pilot projects. The projects include attempts to increase the use of online renewals for licence plate stickers, to encourage Ontarian homeowners to conduct roofing inside the formal economy, and as already discussed, to encourage more organ donor registrations through Ontario's prompted choice system. All of these projects are available on their website, complete with their experimental designs.

We believe it is important that Canada have its own departments and agencies dedicated to trialing new initiatives incorporating insights from behavioral economics, even despite other jurisdictions the world over running similar initiatives. This is because policy interventions incorporating behavioral economics are very context specific; these interventions often occur within an existing policy framework, and it is not always obvious what the best way to alter the status-quo is. A good example of this is Ontario's attempt to increase organ donation consent rates. Ontario had a very unique procedure to elicit organ donation consent, and there was no obvious way to simplify the process or to make consent appear more attractive. A specific intervention was needed to find what process worked best for Ontario.

Despite the growing enthusiasm for behavioral economics and its application to public policy, there is disagreement with regards to its promise. Critics argue that its findings are often too trivial to substantiate meaningful positive change. They argue that relative to traditional economic interventions, accounting for behavioral biases in policy formulation often has only a marginal impact on individuals' behaviour, and may not be sufficient to affect systemic problems such as poverty (e.g. Loewenstein & Ubel, 2010). Under this lens, focussing on formulating and trialing different nudges may be distracting away from implementing traditional and proven public policy interventions.

Here, our claim that behavioral economics is an add-on to neo-classical economics, and not a substitute, is particularly important. We hence agree with Bhargava and Lowenstein (2015) that behavioral economic models should not replace traditional economic models in informing public policy, but should complement them. In particular, we believe that the policy problem should inform the policy response; if the economic incentives are in place to encourage desirable behaviour, but individuals are still not acting in their best interests because of known cognitive/behavioral biases, then perhaps it is necessary to inform future policy interventions with behavioral economics. However, we are still in a learning phase, and more work is needed to understand how precisely to incorporate behavioral economics in public policy.

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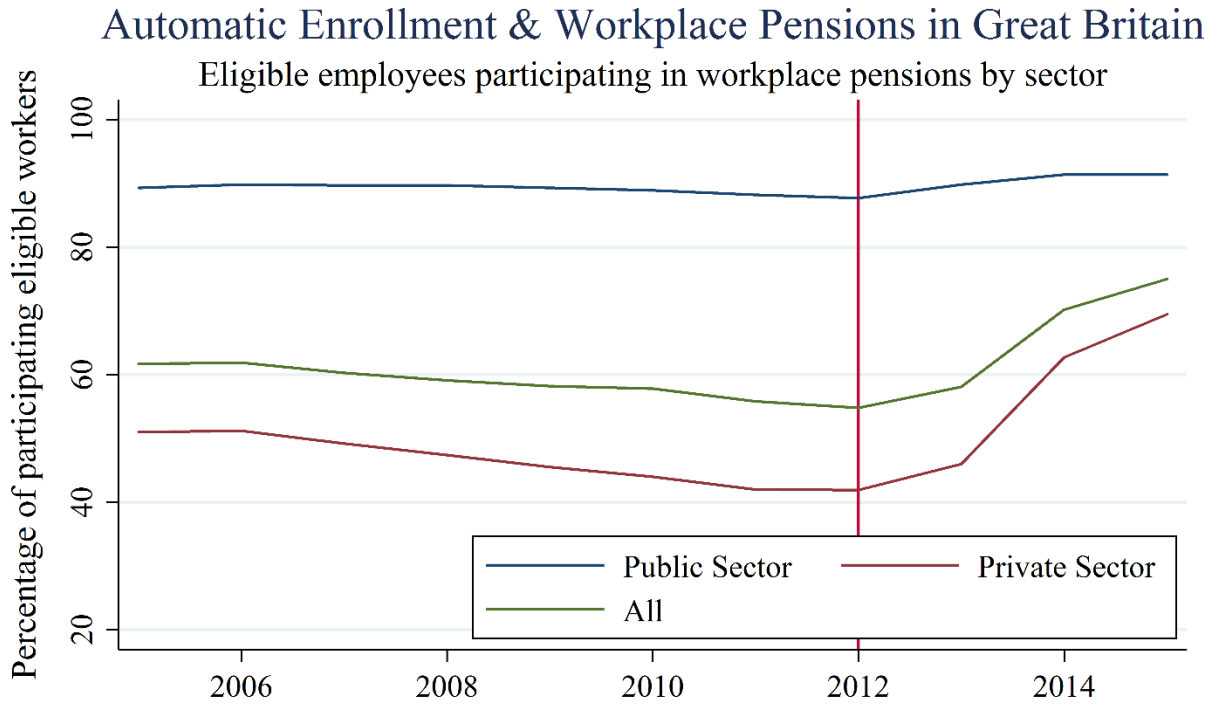
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Figures:

Figure I:

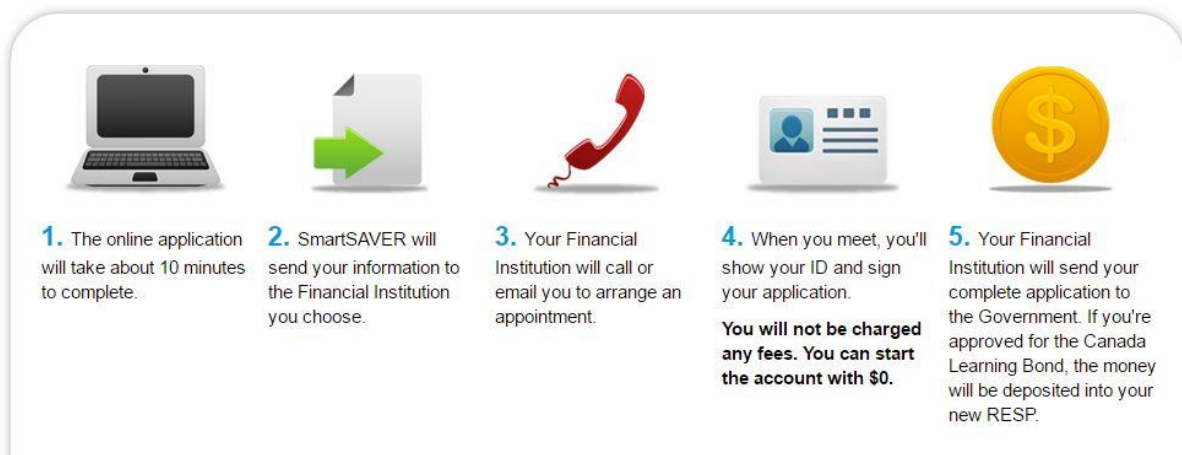


Source: Department for Work & Pensions estimates derived from the Office for National Statistics' Annual Survey of Hours and Earnings, Great Britain 2004–2014. Vertical red line indicates initiation of mandated automatic enrollment into workplace pensions. This graph is a replication of Figure 5 in National Audit Office, 2015.

Figure II:

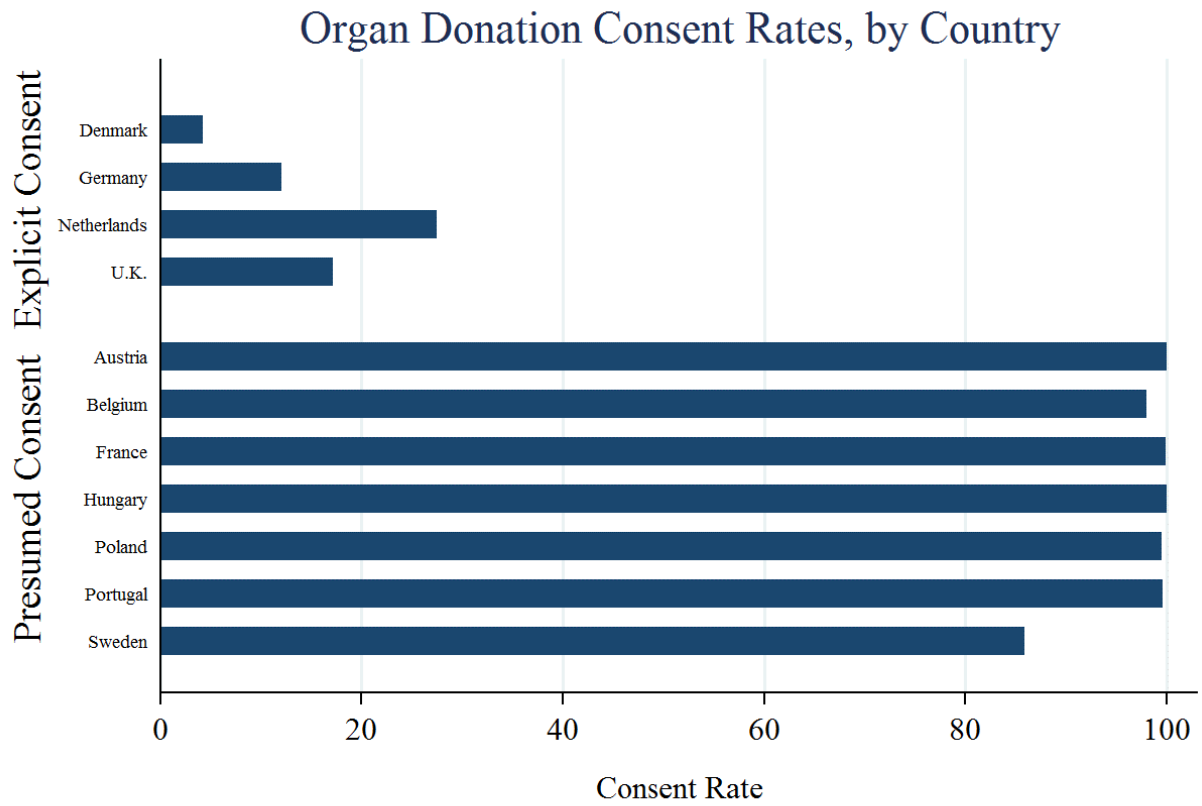


Here's how Start My RESP works –



This is an image of SmartSaver's online RESP enrollment procedure. Source: <https://www.smartsaver.org/>

Figure III:



Effective organ donation consent rates, by country. This is a replication of figure 2 from Johnson and Goldstein (2003).

Figure IV:

Gift of Life Consent Form Organ and Tissue Donor Registration

You can help to save a life by consenting to be an organ and tissue donor.

You can register your consent to be an organ and tissue donor with the Ministry of Health and Long-Term Care in one of three ways.

- Visit ServiceOntario.ca/BeADonor to complete the Online Organ and Tissue Donor Registration
- Mail this completed and signed Consent Form to:
Organ Donor Consent
ServiceOntario
PO Box 48
Kingston ON K7L 5J3
- Bring a completed and signed Consent Form to a ServiceOntario centre. Go to ServiceOntario.ca/infocentres to find the location nearest you.

Consent forms can be found online at BeADonor.ca.

ServiceOntario is responsible for processing Gift of Life Consent forms on behalf of the Ministry of Health and Long-Term Care.

Be informed! Please visit BeADonor.ca for more information on organ and tissue donation or call 1 800 263-2833.

In making your decision to consent, please consider the following:

- One organ and tissue donor can save up to 8 lives and enhance 70 others.
- You must be 18 years of age or older in order to consent to the donation of your organs and tissue.
- By filling out this Consent Form you are consenting to the Ministry of Health and Long-Term Care's collection of your information about your decision to donate your organs and tissue.
- The Ministry will use the information about your decision and disclose it to the Trillium Gift of Life Network for the purpose of ensuring that your donation decision is known.
- If you consent, the words "Donor/Donneur" and a code showing your donation decision will be printed on the back of your photo Health Card.
- You have the right to decide whether or not to consent to the donation of your organs and tissue. Your consent is not required in order to be eligible for a Health Card. You may change or withdraw your consent at any time in writing by going online to ServiceOntario.ca/BeADonor, going to a ServiceOntario centre or writing to the address above.

Notice
The personal information you provide on this form is collected by the Ministry of Health and Long-Term Care for the purpose of recording your decision to be an organ and tissue donor. It may be used and disclosed in accordance with the Personal Information Protection Act (PIPA), as described in the Ministry's "Statement of Information Practices", which are available at Ontario.ca/health. In addition, the Trillium Gift of Life Network will collect this information from the Ministry for the purpose of facilitating organ and tissue transplants and research in Ontario in accordance with section 8.19 of the Trillium Gift of Life Network Act.

If you have questions about registering, changing or withdrawing your consent, please call ServiceOntario.ca/Info.

Toll free: 1 866 832-3161
416 314-6518 (in Toronto)

TTY toll free: 1 800 367-6559
416 324-4232 (in Toronto)

or write to: Team Manager
ServiceOntario Contact Centre
PO Box 102 777 Bay Street
Toronto, ON M5G 2C8

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[Print Form](#) [Clear Form](#)

Organ and Tissue Donor Registration

**If you needed a transplant, would you have one?
If so, please help save lives and register today.**

To register as an organ and tissue donor, simply fill out this form and hand it to the agent. You can easily withdraw your consent anytime. Please see the reverse of this form for details about how to contact us.

- I consent to help save lives by becoming an organ and tissue donor for:**
 - Transplant only
 - Transplant / organ and tissue research
- I wish to donate:**
 - Any needed organs and tissue
 - Any needed organs and tissue **except** for those indicated below. (Check only organs and tissue you **do not** want to donate. If you would like to donate all needed organs and tissue, select the box above.)

| | | | |
|----------------------------------|--------------------------------|--------------------------------|-----------------------------------|
| <input type="checkbox"/> Kidneys | <input type="checkbox"/> Eyes | <input type="checkbox"/> Liver | <input type="checkbox"/> Skin |
| <input type="checkbox"/> Heart | <input type="checkbox"/> Lungs | <input type="checkbox"/> Bone | <input type="checkbox"/> Pancreas |

Notice
The personal information you provide on this form is collected by the Ministry of Health and Long-Term Care for the purpose of recording your decision to be an organ and tissue donor. It may be used and disclosed in accordance with the Personal Information Protection Act (PIPA), as described in the Ministry's "Statement of Information Practices", which are available at Ontario.ca/health. In addition, the Trillium Gift of Life Network will collect this information from the Ministry for the purpose of facilitating organ and tissue transplants and research as well as sharing this information with your family so that they can honour your wishes at end of life. If you have questions about the collection, use and / or disclosure of your personal information, please see the reverse of this form for details about how to contact us.

By signing below, I am consenting to be an organ and tissue donor after my death.

| | | |
|--|-----------|------|
| Name (as it appears on your Health Card) | Signature | Date |
| | X | |

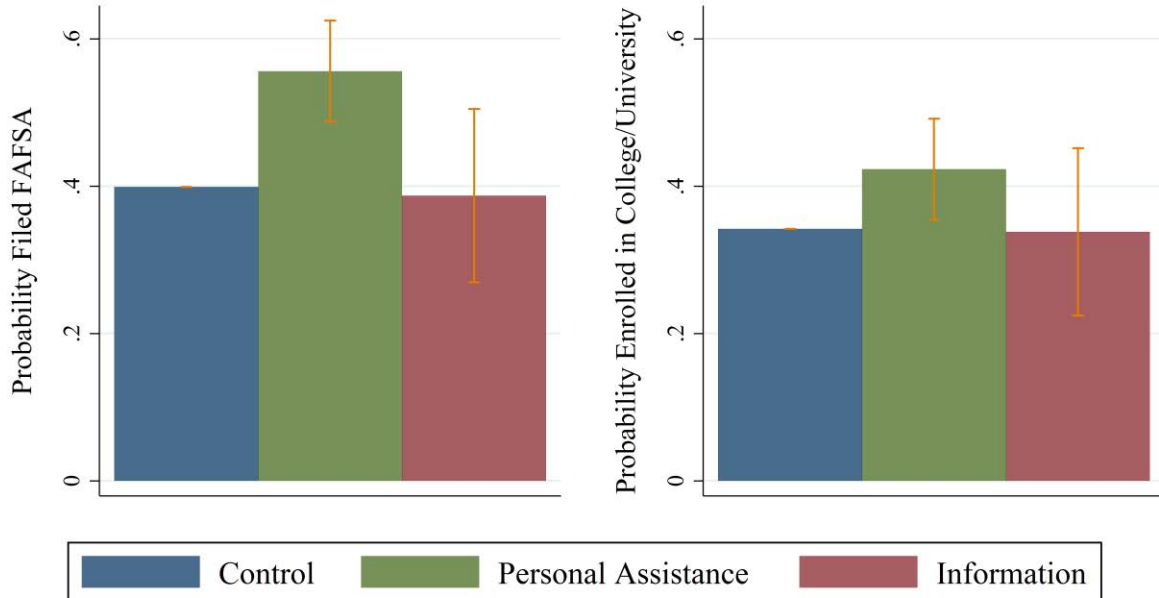
4902-44 (2/14/2016) © Queen's Printer for Ontario, 2014

Left: Ontario’s old organ donor consent registration form. Right: An experimental organ donor consent registration form used in a pilot project conducted by the Ontario Ministry of Health, Trillium Gift of Life Network, Service Ontario, and the Treasury Board Secretariat’s Behavioral Insights Unit. This experimental consent form simplifies the original form and includes the nudge statement: “If you needed a transplant, would you have one?” Source: Treasury Board Secretariat, 2016.

Figure V:

Outcomes During First Year Following Experiment

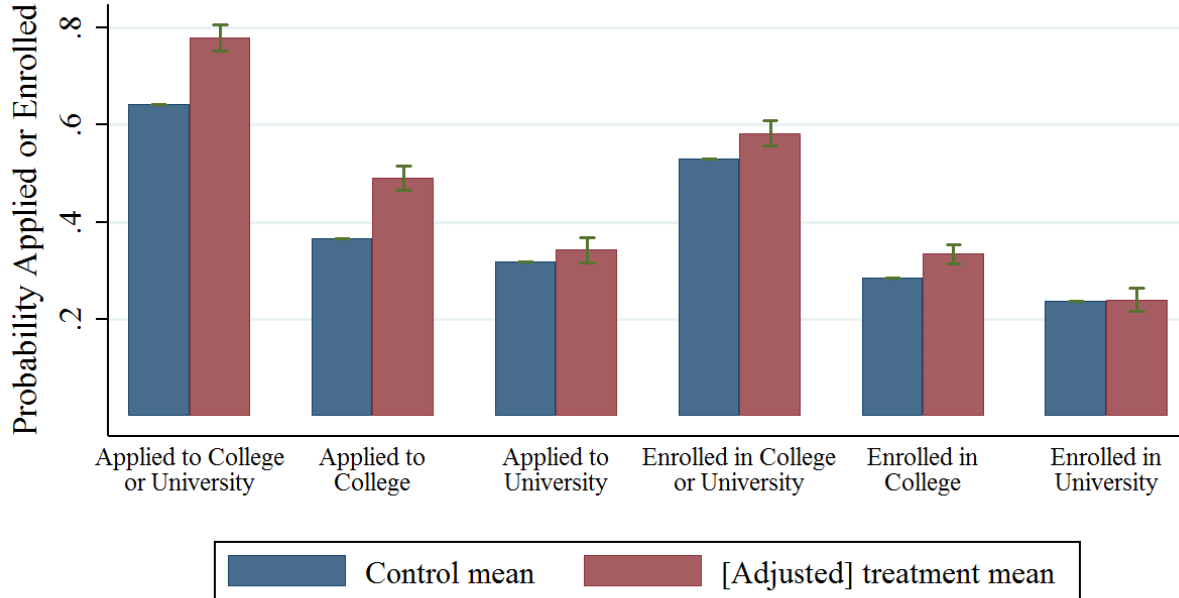
Bettinger et al. (2012) - Table III



These bar charts display results of the FAFSA experiment as reported in Table III of Bettinger, et al. (2012). Treatment effects are estimated using OLS. The Personal Assistance treatment group were offered direct assistance with completing a FAFSA application. The Information treatment were provided with an estimate of the amount of financial aid their children could obtain from completing the FAFSA. 95% confidence intervals are shown in brackets, estimated using robust standard errors. Participants (N=868).

Figure VI:

Estimated LifeAfterHighSchool Program Effect Oreopoulos & Ford (2016) - Table IV



These bar graphs report the results from the LifeAfterHighSchool project, as reported in Oreopoulos & Ford (2016). The increase in probability of applying or enrolling from exposure to the program is estimated from a probit model of the outcome variable regressed on a treatment dummy, along with fixed effects for cohort year and school. 95% confidence intervals are shown in brackets, and were constructed from standard errors clustered by school. The sample consists of grade 12 graduates (N=38,130).

Figure VII:

Design 1 – Control (baseline)
Standard message



Design 2 – Treatment 1
Nudge: Call to action



Design 4 - Treatment 3
Nudge: Framing



Design 3 – Treatment 2
Nudge: Social norm



Design 5 – Treatment 4
Nudge: Priming

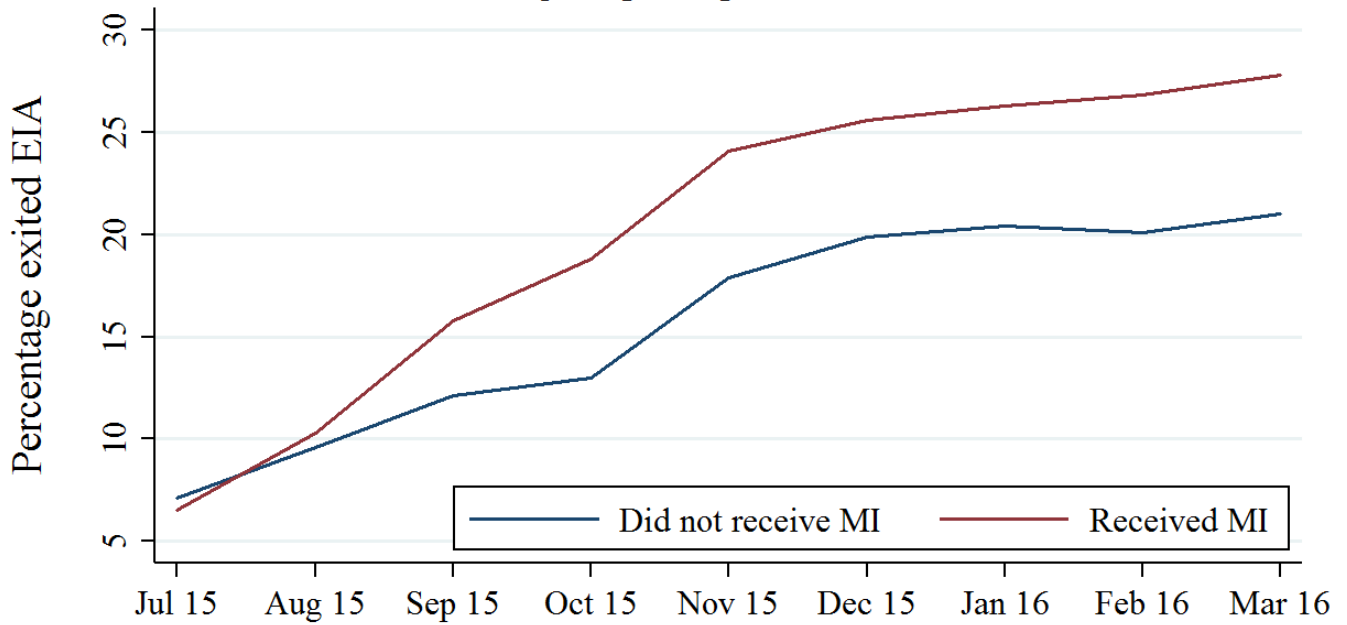


ESDC trialed five different designs of a web-link that directed web-surfers from the ESDC Job Bank database to the Job Match service webpage. Designs three, four, and five include a different “nudge” statement, each drawing inspiration from one of three behavioral economic principles: developing social norms, framing, and priming/salience. Source: Parent & Audet, 2016.

Figure VIII:

Effect of Motivational Interviewing on Employment and Income Assistance Program (EIA)

Percentage of participants who exited EIA



Source: This is a replication of the graph 'EIA Exit Outcomes and Impacts - Trends' found in slide 17 of Palamar et al. (2016). The data used in the presentation is from the Social Allowances Management Information Network (SAMIN) Research Data Set data for enrolled General Assistance and Single Parent EIA recipients. Non-MI group (N=553) and MI group (N=399).

Figure IX:

| | |
|--|------------|
| I certify that the information given on this return and in any documents attached is correct and complete and fully discloses all my income. | |
| Sign here _____ | |
| It is a serious offence to make a false return. | |
| Telephone _____ | Date _____ |

| Declaration - Sign here | | |
|-------------------------|--|------------|
| I, _____ | , declare that the information that I provide on this return will be complete and correct. | |
| (Print name) | It is a serious offence to make a false return. | |
| Sign here _____ | Telephone _____ | Date _____ |

Top: Original signature block on Canadian personal income tax returns. Bottom: Experimental signature block on Canadian personal income tax returns as implemented by the Canada Revenue Agency in a recent pilot project. This signature block was moved to the top of the tax return, its text enlarged, the wording surrounding the block simplified, the warning for providing inaccurate information bolded, and tax filers were asked to print their name besides their signature. Source: Authors' correspondence with the Canada Revenue Agency.