A field experiment on the demand for health risk prevention investments among the elderly

Simon Beck, Bruno Crépon and Lucile Romanello*

February 13, 2017

Abstract

Among elderly people, falls and other accidents at home, such as falls, result in injuries and dependency. Although preventative safety adaptations to dwellings reduce risk, the demand for these is low, and little is known about the determinants of such investments. In a large randomized experiment, a representative sample of almost 50,000 retired people in the Paris area are exposed to various incentives to invest in the safety of their dwellings. We consider 14 different types of incentives based either on subsidizing investments or providing information about the risk of injuries. In absolute terms, none of the interventions we consider has a large effect – even our benchmark intervention, in which safety adaptations are offered free of charge. In relative terms, however, the impact is large; it almost doubles the baseline demand level. The main result of this experiment is that information matters significantly: providing information about the risk of falling actually has a larger impact than making investments free.

*Beck: CREST. Crépon: CREST, IZA and CEPR, crepon@ensae.fr. Romanello: IPP, lucile.romanello@ipp.eu. The French National Old-Age Insurance Fund (CNAV) provided access to data and financial support for this study. We thank Vincent Poubelle, Christiane Flouquet Rémi Fau, Julie Feroldi, Odile Charrier, Hélène Venchiarutti, Roxane Bricet, Dorine Rouesne, Zoarinandrasana Arlène Rsmoelina and Alexandre Venchiarutti for their help when carrying out this study. We are especially grateful to Albert Lautman for his constant and invaluable support and to Dylan Glover and Anett John for detailed comments and suggestions, as well as to seminar participants for insightful discussions. All errors are our own.

1 Introduction

Among elderly people, falls and similar accidents at home remain a major cause of injury, loss of self-sufficiency and even death.[1] To address this concern and reduce the potential burden for society, national organizations in charge of aging have issued guidelines or launched programs to incentivize the elderly to adopt preventative behaviors.[2] The medical literature has indeed shown positive effects of dedicated programs, such as preventative investments in the safety of dwellings.[3] However, these programs frequently have a low take-up rate.

Classical models of health behaviors underline the costs of the investment, time preferences, and the distribution of the perceived value of health capital, which involves perceived probabilities of falling and its consequences on well-being. This suggests two main families of policy interventions: first, making investment cheaper, and second, providing information about the risk of a fall and its consequences.

Recent papers have pointed to the role of price and financial incentives in health behaviors. For example, Charness and Gneezy (2009) and Royer et al. (2015) show how financial incentives affect participation to the gym.[4] Many randomized experiments have also been conducted in developing countries to determine how price affects purchase decisions for preventative health products, all finding a strong sensitivity of demand to prices (Kremer et al., 2011; Dupas and Miguel, 2016).[5] Some papers have also pointed to the role of non-monetary costs. For example, Banerjee et al. (2010); Thornton (2008); Ashraf et al. (2014) show that effort and time cost matter.

Evidence is mixed in the literature concerning the role of information in determining pre-

[1] See the Center for Disease Control and Prevention web page: Falls Among Older Adults: An Overview, *http://www.cdc.gov/homeandrecreationalsafety/falls/adultfalls.html.*

[2] See for example Oxley (2009) and, in the USA, the National Council of Aging background paper: Health Promotion, Disease Prevention and Healthy Aging 2011 Older Americans Act Reauthorization *http://www.ncoa.org/assets/files/pdf/NCOA-OAA-Reauthorization-Healthy-Aging-Concept-Paper.pdf.*

[3] Positive effects have also been achieved by multifactorial risk assessment and management programs, physical exercises, environmental accommodation, and education (See Kannus et al. (2005) for a review of evidence from randomized controlled trials in the medical literature).

[4] See also Volpp et al. (2009) on smoking behavior.

[5] See Kremer and Miguel (2007) on price sensitivity of the demand for deworming pills, Cohen and Dupas (2010) for malaria-reducing bed nets, Ashraf et al. (2010) for chlorine, or Meredith et al. (2013) for rubber shoes.

ventive health investments. There is, on one hand, substantial evidence that the availability of information matters. (Kremer et al., 2011; Dupas and Miguel, 2016) provide examples from developing countries where disseminating information succeeds in achieving the adoption of some preventive behaviors.[6] On the other hand, the impact of information on willingness to pay is usually found to be small and non significant. For example Meredith et al. (2013) show that the demand for rubber shoes that protect people from hookworm infections at several randomly chosen prices does not depend on information.[7] Also related to the non-monetary cost literature, Kling et al. (2012) show that comparison frictions matter in health decisions.

The question we address is whether we find similar results for safety investments invested in the homes of retirees. Although there has been considerable research on aging and on the determinants of health investments, we know very little about health decisions made by seniors. We explore the sensitivity of health investments to both costs, including non-monetary costs, and to information about the risk of falls and their consequences.

We run a large-scale randomized experiment based on a sample of 48,090 retired people, representative of the Île-de-France (the region of France that includes Paris). We explore the impact of a variety of treatments, all of which aim at sustaining demand for preventative investments, such as cost reductions and information provision about the risks of falls and their consequences. We also develop a theoretical framework to analyze how treatments could impact the level of demand for the program. This experiment was realized in partnership with the French National Old-Age Insurance Fund (CNAV).[8] Following the method pioneered by Bertrand et al. (2010), this experiment consists of sending 14 different brochures to randomly chosen groups of retired people. Each brochure emphasizing one of the potential determinants of demand for preventive investments. The brochures are sent twice in a mail with the official logo of the CNAV, the organization designated for paying pensions to French citizens. People

[6]See, for example, Madajewicz et al. (2007) and Jalan and Somanathan (2008) on information about water quality, Cohen et al. (2015) on information about illness, and Dupas (2011) on information about the risk of HIV infection.

[7]See also results from Ma et al. (2013) showing that the demand for glasses among myopic youth in China is highly sensitive to prices, but do not depend at any price on information about risk to fail wearing glasses.

[8]CNAV stands for Caisse National d'Assurance Vieillesse. It is part of the social security system and pays all retired people a pension according to the number of years they contributed when active.

are not likely to consider this mail as junk mail.

Our main outcome variable is the registration for the Personalized Actions Programs (PAP), a special program dedicated to prevention, which was created in 2004 by the CNAV. The general purpose of the program is to provide various types of assistance to retired people. One of its components is the improvement of the house's safety to enable retired people to remain self-sufficient at home. The program offers participants a visit by a caseworker, to determine the assistance that each subject may need and gives recommendations about home adaptation. Implementation of the recommendations is then the responsibility of the participant, but the program offers means-tested subsidies for related expenses. Currently, the main concern of the CNAV is the low level of demand for this program. In 2011, for example, only 0.2% of the retired people living in Île-de-France were registered for this prevention program.

We implement several treatments. The first channel we consider is the cost of the investment. Various treatments offer participants subsidies in addition to the one initially offered by the CNAV. For instance, in our benchmark intervention, the agency proposed to take over all the expenses, making safety investments totally free for this treatment group. We also test the impact of partial subsidies at the levels of 15% and 35% of the total cost. Furthermore, we test the impact of an additional reduction including a time limit, as well as an intervention aimed at reducing non-monetary procedural costs. Secondly, we distribute seven brochures that provide information on the risk of falls. Information is not a type of treatment as clearly defined as the amount of a subsidy. It can vary in many dimensions. Banerjee et al. (2015), for example, examine, the impact of information on double fortified salt, and their treatments vary in terms of "intensity" contrasting a light intervention like a flyer with an edutainment video. In this paper we provide information of a same intensity but which varies in the way it is conveyed. We examine the effects of varying the framing of information, presenting it as a statistical table, a testimonial or a personalized letter from the director of the CNAV. We also change the framing emphasizing either losses due to falls or gains related to not falling. Finally, in an attempt to explore the role of biased

expectations, we send brochures explicitly telling retired people that, on average, either they underestimate or correctly estimate the risk of falling.

To complete what we can learn from the program registration outcome variable, we also run a survey shortly after sending the brochures. We collect additional information on risk perception and on planned safety investments. This allows us not only to capture features of the decision process, but also to study investment decisions which take place outside the program.

Our first and main result is that none of the treatments has a huge effect on the demand for the program. The demand in the control group is as low as 0.9%, and the biggest effect we observe is an increase by 0.9 percentage points, clearly reflecting the low take-up for the prevention program. Our second result is that if costs matter, changing the cost do not appear to have much power. The 100% subsidy has a significant impact, almost doubling the level of demand. This is far below what we expected for such an intensive treatment, and contrast with existing results. We also fail to detect any impact for each of the partial tested subsidies. Our third finding is related to risk information. Our paper actually shows that information about risk can modify health behaviors and investment decisions. We find a large impact for some of the information treatments, showing that information is as effective as a 100% subsidy. This is also in sharp contrast with existing results, usually showing a weak impact of information on willingness to pay. The treatment that presents the perceived risks of a fall to be equal to its actual risks has the largest effect on demand, increasing the take-up rate by 0.9 percentage points. In line with Bertrand et al. (2010), our results also show that the framing matters: statistical information has a significant impact, whereas testimonials and personalized letters do not increase the level of demand. Another finding is that non-monetary costs also matter. Simply explaining how to practically register for the program has a significant impact on demand. It achieves more than 60% of the gains obtained by the 100% subsidy. Finally our treatments also modify the distribution of perceived risk. We measure risk perception through a survey implemented when brochures are sent for the second time. Brochures mainly reduce the proportion of households with members who

consider their home is "*not risky at all*", but they had a very small positive impact on the proportion of retired people who consider their dwelling as risky.

These results contribute to the existing literature in several different ways. First we explore the determinants of the demand for preventive health investments, including cost subsidies, non-monetary cost reduction and information provision. Secondly we explore various ways to convey information; one of our most important findings is that although information is potentially a powerful tool, the way information is provided matters substantially. Lastly, although we know much about aging and health decisions in general, we know less about the determinants of the demand for preventive health products by seniors. We use a large representative sample of retirees in Ile de France, the same population as the one that would be targeted by a national campaign.

The paper is organized as follows. Section 2 presents a literature review on health behaviors. Section 3 provides background information on the program and the experimental design we implemented. Section 4 presents a theoretical framework and analyzes the effect of each treatment in this conceptual framework. Section 5 presents the data we used. Section 6 presents the results, while Section 7 concludes.

2 Literature review

A large number of studies have examined the role of prices and financial incentives on health behaviors in many different settings. They usually point to strong positive impacts. Incentive schemes aimed at encouraging weight loss is an example (Volpp et al., 2008; John et al., 2011); financial incentives to attend the gym is another (Charness and Gneezy, 2009; Royer et al., 2015). There is now a large body of evidence showing how the demand for health products strongly varies with prices and financial incentives in developing countries (see the review in Kremer et al. (2011); Dupas and Miguel (2016)). One especially important finding is that charging a very small price or offering a very small incentive can lead to large changes in

demand.[9] These results partially translate to developed countries. Finkelstein et al. (2007) do not find significant differences in weight loss for either large or small financial incentives schemes, but Just and Price (2013) show that small financial rewards to incentivize healthy food choices at school have large positive impacts. In our experiment, we will explore the role of different subsidies which are either small or large.

The role of prices as a device to screen individuals who need the product the most has also been studied, as well as the role of small non monetary costs to improve such targeting (Cohen and Dupas, 2010; Ashraf et al., 2010; Dupas et al., 2016; Ma et al., 2013). Subsidizing might end-up equipping households who do not need the investment. This is, unfortunately, a dimension that we will not be able to address. Our experiment will only help to identify how the demand for safety investments depends on the cost of these investments.

A frequently reported result on financial incentives is the fact that their impact quickly fades out. This is for example the case for Finkelstein et al. (2007); Cawley and Price (2013); John et al. (2011) for weight loss incentive schemes. These results are frequently seen as related to time inconsistent behavior (Laibson, 1997; O'Donoghue and Rabin, 1999). Time inconsistency is potentially an important concern in our case, as well. Several interventions have been tested to address the problem of time inconsistent behavior in health and the related demand for control devices. Royer et al. (2015) show, for example, that offering a commitment contract had a positive effect for gym attendance. Another example is given by Gine et al. (2010), who show that demand for commitment exists in people who want to quit smoking. This is an aspect that we will also examine in our experiment, using short deadlines. Short deadlines can also have a positive impact on demand in the presence of time inconsistencies. Within the context of the demand for microfinance, Bertrand et al. (2010) find that short deadlines reduce the demand for microfinance loans.

A strand of the economic literature also explores the relationship between non-monetary costs and the decision making process. Non-monetary costs can be of many different types.

[9]Emblematic studies are (Banerjee et al., 2010) for small incentives and (Cohen and Dupas, 2010) and (Kremer and Miguel, 2007) for charging small prices.

One important type is the cost in time of the required steps to make the investment. Several studies in developing countries show that this type of cost is important, see Thornton (2008), in the case of HIV testing, Banerjee et al. (2010), for reliable immunization camp and Ashraf et al. (2014) for family planning services. Comparison frictions is another example, Kling et al. (2012) consider drug prescription plans for Medicare in the United States, and show that providing direct relevant information to consumers has a large impact on choices. In our experiment we will also address if this is relevant for the decision making process of health investments by retired people.

Another strand of the economic literature emphasizes the role of information. A lack of information about risks is another explanation for low demand. Many randomized control trials have examined the role of information in health decisions. On one hand, a large number of studies show that information is important for health decisions. For example, Dupas (2011) shows that informing adolescent girls in Kenya about the risk of HIV infection leads to changes in their sexual behavior. Madajewicz et al. (2007) and Jalan and Somanathan (2008) find that information about water quality also had a large impact on behaviors, resulting in outcomes such as adopting purification techniques or changing wells. There are, however, some limitations to the provision of information. In the case of food choice, Downs et al. (2009) point to potential adverse effects, showing that providing information can, in fact, increase the calorie intake of people under diet. They also show that manipulating information (for instance, making part of the information less accessible) has a large impact on choices and can be more effective than providing objective information on calorie content.

On the other hand, numerous studies have found that information does not affect the willingness to pay, which has implications for our study. For instance, Meredith et al. (2013) cross-cut a set of vouchers offering subsidies of different amount to buy rubber shoes ombined with with information in the form of a short oral speech. They show that the two demand curves identified for individuals who received or did not receive the information are identical. The level of detail provided is also important. Banerjee et al. (2015) compare the demand for Iron Deficient Salt when households received either no information, information through

a flyer informing them where to buy salt, or a detailed edutainment video that explained why salt is important. They show that the use of salt responds strongly to the most detailed information treatment, both when the salt was offered for free and when it was sold at a cost. In contrast, they find no effect from the flyer. Ma et al. (2013) show that the willingness to pay for glasses of household with a myopic child do not depend on a detailed information, but that the usage of the glasses by child was impacted by information.

In our experiment, we also address the impact of information. Bertrand et al. (2010) study the demand for microcredit in South Africa and show that the framing of messages matters and in line with this study, we consider seven different ways to convey information on the risk of falls and their consequences. This is worth given the limited impacts found for the provision of information on risks, on the willingness to pay. We consider seven different ways to convey information on risk of falls and their consequences. We change the framing of the message about risk presenting information in three ways, either as a statistical table, a testimony or a personalized letter. Our other treatments emphasize either gains to remain healthy or losses associated with falls. We also add information on perceived and true risks of falling, highlighting whether they are consistent or not.

3 The program and the experimental design

The National Old-Age Insurance Fund (CNAV) has a social department devoted to provide various types of assistance to retired people. All these services are provided through Personalized Actions Programs (PAP), a global prevention program started in 2004. A network of contracted operators is in charge of identifying needs and implementing the program. In order to participate, retired people must submit an application. Upon acceptance, the request is transmitted to one of the mandated service providers.[10] When a new pensioner is registered in the program, a caseworker conducts a home visit to observe the living environment and interview the elderly person to evaluate specific needs. The caseworker recommends

[10]To be accepted, people must have paid their contributions to the French Social Security system.

adapted supports and services from a range of available services, all aimed at maintaining self-sufficiency and reducing the risk of disability. These services include home help, tele-assistance, housing adaptation, meal delivery, and prevention workshops.

In the housing adaptation component of the PAP program, the caseworker performs a detailed review of the housing and makes suggestions for adaptations that would help the resident perform activities independently and safely at home. The program aims to limit physical environmental barriers, facilitate mobility, and reduce the risk of falling. Grab bars, external handrails, stair-rails, ramps, and alterations to steps are all examples of these frequently recommended adaptations. The elderly person is then responsible for implementing the adaptations. The program also offers quite substantial means-tested subsidies, ranging from 27% to 90%. Each participant must first apply to obtain the subsidy, providing a description of the suggested home adaptations. The subsidy is then granted upon approval of the local program manager. Despite the apparent effectiveness of home adaptation measures, it is still one of the less-demanded services among those offered by the program: of the 350,000 retired people who participate in a PAP program each year, only 15,000 (around 4%) accept home adaptations.

In partnership with the National Old-Age Insurance Fund (CNAV), we run a large field experiment to achieve a better understanding of the determinants of demand for this program. Based on the literature, we test some possible determinants by sending 14 different types of brochures to random groups of retired people. We explore two main categories of treatments. The first group focuses on altering the cost of housing adaptation, presenting the existing subsidy scheme provided by the Personalized Actions Programs (PAP) and randomly offering additional subsidies of various amounts and nature. The second group provides information about the risk of falling, as well as its consequences and test framing manipulations.

Of the 48,090 retired people included in the experiment, 42,079 received one of the 14 brochures. Brochures were sent twice in three waves in order to efficiently manage the follow-up. A first wave of brochures was sent in September 2011, with a reminder in October 2011;

a second wave in October 2011 and November 2011; and a last wave in November 2011 and December 2011 (see Table 1).

Table 1: Schedule of mailing and survey

	Wave 1	**Wave 2**	**Wave 3**
1st mailing of brochures	09/12	10/05	11/04
2nd mailing of brochures and 1st mailing of questionnaire	10/03	11/02	12/05
2nd mailing of questionnaire	10/17	11/16	12/19
Phone survey of random non-respondents	11/07	12/05	01/04

Brochures were mailed two times but in three waves in order to manage the potential flow of calls. The second mailing was performed a month after the first and also included the questionnaire for the survey. An attempt to reach a sample of non-respondents was done two weeks later. The table gives the precise dates of all these steps.

All the 14 brochures provide different incentives to participate to the prevention program. The phone number of the agency was clearly indicated on the sending brochure. Brochures have four pages, all identical, except for the title of the brochure and the page providing treatment-specific informations. Appendix C present key features of a selected set of the brochures we sent. Internet appendix D, presents the relevant pages of all our brochures.

Brochures were sent to participants by mail at their name and address; every piece of mail contained the official logo of the National Old-Age Insurance Fund. A precise description of each brochure is provided in Table 2. Following the campaign, we create a small call center with four assistants in charge of receiving calls, answering questions from the retired people, and and helping them to subscribe to the program.

Table 2: Summary of treatments

	Description	**Number of retired people**
Brochure 1	Brochure not emphasizing home adaptation : describe the whole range of CNAV's social services	3,006
Cost treatments		
Brochure 2	Present the subsidies-income scheme	3,006
Brochure 3	Add a 15% extra subsidy	3,006
Brochure 4	Add a 35% extra subsidy	3,006
Brochure 5	Free: housing adaptation is free	3,005
Brochure 6	Short deadline: add 20% extra subsidy against a commitment in the 15 coming days	3,005
Brochure 7	Non-monetary costs reduction: explain the registration process	3,005
Information treatments		
Information on risk and consequences of a fall		
Brochure 8	Provide statistical information about falls	3,006
Brochure 9	Use the testimony of a retired woman to convey information about risks of falls	3,006
Brochure 10	Use a personalized letter from the Director of CNAV about risks of falls	3,006
Information on loss of fall and gain of remaining healthy		
Brochure 11	Emphasizes losses associated with falls	3,006
Brochure 12	Emphasizes gains to remain valid	3,006
Information about perceived and true risk of falling		
Brochure 13	Underestimation: graphics with a low "perceived" risk and a high "true" risk of falling	3,005
Brochure 14	Correct perception: graphics with same high "perceived" and "true" risk of falling	3,005
Total	All brochures	42,079
No brochure group		6,011
Total		48,090

4 Theoretical framework

In this section, we develop a simple framework aimed at making more precise the way treatments can change investment decisions. We first develop a general framework and then describe how each treatment can modify the level of demand for the prevention programm.

4.1 General framework

We consider two potential states that a retired person can achieve. There is a state in which no fall occurs, providing a utility level u. In the other state, a fall occurs, providing a utility level $u - l$. Given a probability of fall p, the expected utility level is simply $U(p) = u - pl$. Retired people can also do a lump sum investment in the home safety at a cost c_0. We assume that this investment leads to a reduction of the risk to zero. Let $D \in \{I, N\}$ represent the decision to invest (I) or not (N) in home safety. The distribution of the risk of fall p without investment is unknown. However, there is a perceived distribution of the parameter p by retired people: $f_0(p)$. Retired people take their investment decision based on this perceived distribution. Treatments are either changes in cost ($c_0 \to c_1 < c_0$) or a shift in the perceived distribution of a fall's probability ($\phi_0(p) \to \phi_1(p)$).

We consider a standard case in which retired people take their investment decision based on the expected utility with respect to the perceived distribution of risk. In this case, the expected utility is $u - p_0 l$, where $p_0 = E_0(p)$ represents the average perceived probability of falling. Retired people will decide to invest as long as $p_0 l > c_0$. Subsidizing investment will trigger investment decision for retired people for whom $c_1 \leq p_0 l \leq c_0$. If we consider that c_0 and c_1 are constant, and that there is a distribution F_0 of the parameter p_0, the impact of a subsidy is $F_0(c_0/l) - F_0(c_1/l)$. Providing information changes the perceived expected utility gains to invest in prevention from $p_0 l$ to $p_1 l$. If the latter is the larger, providing information would lead retired people for whom $p_0 l < c_0 < p_1 l$ to invest in prevention. Similarly, if we consider there is a distribution F_1 of the parameter p_1, the effect of information will be $F_1(c_0/l) - F_0(c_0/l)$.

4.2 Treatments and their theoretical effects

Control group and non-informative brochure

We first consider two control groups: a no-brochure group of 6,011 retired people who do not receive any brochure, and a second group of 3,006 retired people who receive a non-informative brochure (brochure 1) that contains no specific message related to housing issues. The brochure 1 gives a simple description of all services offered by the National Old-Age Insurance Fund, briefly presenting the prevention program in the same way as other offered services. This non-informative brochure does not contain any specific incentive, and only tests if implementing an experiment generates demand. After confirming there is no difference between these two groups, we merge them into one single control group of 9,017 retired people.

Changing the cost

We implement cost treatments to test the sensitivity of demand to monetary and non-monetary costs (see Table 2, brochures 2 to 7).

Brochure 2 provides only information on the already existing financial support offered by the CNAV. The brochure presents the amount of the offered subsidy, depending on income, through a simple table indicating the percentage of support for each category of income. The amount varies from 27% for a household earning more than 2,246 euros a month to 90% for a household earning less than 1,374 euros. Two different scales are presented: one for people living alone and another one for couples. A concrete example is presented to facilitate the understanding.

Brochures 3 and 4 are exactly the same as the previous one, but they offer an extra subsidy of respectively 15% and 35%. In these brochures, an example presents the amount that would be paid without the subsidy as well as the amount with the treatment-specific subsidy. If the demand is highly price-sensitive, we might expect even minor discounts to have an impact on demand. Notice that we cannot, however, directly infer the functional form of the demand

curve, because the basic subsidy scheme is based on income. If $Y(s)$ is the level of demand defined as a function of the subsidy, we measure $E(Y(s_i))$, $E(Y(max(s_i + 15\%, 100\%))$, $E(Y(max(s_i + 35\%, 100\%))$ and $E(Y(100\%))$. Treatments just shift the distribution of the existing rebates to the right. Moreover, the potential changes are not the same for each household because the maximum value of a 100% subsidy can be bound. According to French statistics, around 40% of retired households have an income below the threshold opening access to a subsidy of at least 85%. With a 15% additional rebate, they will therefore reach 100%, meaning that the program is free of charge for them. Similarly, 65% of retired households have an income below the threshold opening access to a subsidy of at least 65% and will reach 100% when a 35% additional rebate is offered. Brochure 5 specifies that the home adaptation is totally subsidized.[11]

Brochure 6 deals with time inconsistency. Although some people might be aware that home adaptations will be needed in the future, they nonetheless postpone their investment decisions. Brochure 6 proposes a short-run subsidy of 20%, conditional on applying to the prevention program in the 15 days following the reception of the brochure. The comparison with a treatment offering a same subsidy without any condition would allow us to measure the impact of imposing a short deadline.[12] It is not totally clear,however, how imposing short deadlines is related to time inconsistency. In Appendix A.1, we develop a simple model to discuss more precisely the impact of imposing a short deadline where time preferences are inconsistent. In our model, we consider the issue of choosing when to make an investment. Following Laibson (1997), we assume that time preferences involve a standard discount rate δ but also a preference for present parameter β. Period T is discounted by $\beta\delta^T$ for $T > 0$. We show that some retired people invest in period 0, and some retired people never invest, but also some others plan in period 0 to invest in period 1. In period 1, they postpone their

[11] There is obviously a financial risk associated with this treatment. The CNAV ask us to proceed to a first trial at a very reduced scale to better know the level of financial risk associated. We do this a few months before the experiment.

[12] However, none of the treatments offers a 20% unconditional subsidy. Treatments offer either 15% or 35% unconditional subsidies. We assume linearity of the impact of the subsidy scheme over the range of 15% and 35% to approximate the impact of this treatment. Under this linearity assumption, we simply estimate $\tau_{20} = \tau_{15} \times 3/4 + \tau_{35} \times 1/4$, where τ_r stands for the impact of offering a r% subsidy.

investment and never invest because of time inconsistency. Parameter β plays a key role in this behavior. The main conclusion of the model is that when offering a subsidy of a given amount, imposing a short deadline always has a positive impact on demand. However, the relationship is not linear. It is first increasing in the parameter β, and then decreasing and is equal to zero for the two opposite extreme cases of no biased time preferences ($\beta = 1$) and completely biased time preferences ($\beta = 0$). In this case, the value of the future is zero and, therefore, conditionality has no effect on the level of demand. Finding an impact of a short deadline is symptomatic of biased time preferences. On the opposite, no impact of conditionality can reflect no biased time preferences or strongly biased time preferences.

Brochure 7 attempts to reduce non-monetary procedural costs. The demand process for the program is unknown and retired people may fear being engaged in a process about which they know little. They may overestimate the burden associated with participation in the program. This treatment aims at making the application process clearer and more understandable, bu the use of pictograms and a well-described set of simple steps to follow.

Providing information on risk and consequences of a fall

Brochures 8, 9, and 10 provide information about the aggregate risk of fall P_B. With these treatments, retired people are supposed to adapt their perception of their own risk of falling. In our model, the risk of falling is a key parameter, p_i, in the investment decision. However, this parameter is only known by retired people through its distribution:

$$p_i = p_{i,a} + \varepsilon_{i,a} \tag{1}$$

with $\varepsilon_{i,a} \rightsquigarrow \mathcal{N}(0, \sigma_a^2)$, where $p_{i,a}$ gathers the available information. $\varepsilon_{i,a}$ is therefore a parameter that could be measured by an expert visiting the home, but is unknown by the retired person himself. The average risk level presented in the brochure provides information that helps to reduce the uncertainty about this unknown component of p_i. Each retired person considers that the information P_B provided by the treatment is related to her own situation

through a measurement model $P_B = P_{i,0} + \varepsilon_{i,B}$, where $P_{i,0}$ is in the information set of retired people without the brochure. $\varepsilon_{i,B} \rightsquigarrow \mathcal{N}(0, \sigma_B^2)$ mixes relevant information and measurement errors. We assume that the two variables $\varepsilon_{i,a}$ and $\varepsilon_{i,B}$ have a correlation ρ, which measures how the aggregate information is relevant to retired people's assessment of their own risk. In this case, it is straightforward to derive the distribution of the risk p_i, conditional on the new information P_B: $p_i|P_B \rightsquigarrow \mathcal{N}(p_{i,a} + \rho\sigma_a(P_B - P_{i,0})/\sigma_B, (1-\rho^2)\sigma_B^2)$. Unsurprisingly, the distribution of the perceived risk adjusts, and the adjustment can be upward or downward, depending on the initial perception of the parameter. The size of the adjustment depends on the two parameters, ρ and σ_B^2: the larger ρ and the smaller σ_B^2 are, the larger the adjustment is.

Brochures 8, 9 and 10 provide the same information, framed in different ways, and to which correspond different sets of parameters ρ and σ_B^2. Brochure 8 gives statistical information. If this information could be considered as more precise, retired people can also consider it as irrelevant, because they belong to a specific sub-population for which the risk is lower. In brochure 9, the provided information takes the form of a testimony. A retired woman explains the reasons why she decides to benefit from the prevention program. With a testimony, retired people could identify themselves more closely to the person and consider the provided information as more relevant (ρ closed to 1). On the other hand, the information provided is just narrative ,and the associated σ_B^2 could be considered as large. The treatment 10 is a simple letter. People could feel targeted, and therefore consider the information as more relevant, so ρ is also closed to 1.

Brochures 11 and 12 provide information on the consequences of a fall. We consider now the utility level without fall, $U_{i,no}$, and when a fall occurs $U_{i,f}$. A fall occurs with a probability p_i. The investment decision is based on $V_i = p_i(U_{i,no} - U_{i,f}) = V_{i,no} - V_{i,fall}$. The framework is exactly the same as for the previous treatments, except we consider the parameter V_i instead of only p_i. Retired people have some knowledge $v_{i,a}$ on V_i. The brochure provides information on an aggregate parameter V_B on which retired people have already some information: $V_{i,0}$. The expectation of V_i, conditional on receiving the brochure, is

therefore of the form: $E(V_i|\text{Brochure}) = v_{i,a} + \lambda(V_B - V_{i,0})$, for some λ summarizing second order parameters. Again, the sign of the impact of the treatment depends on the existing baseline level $V_{i,0}$. Treatments 11 and 12 both provide information on the risk of falling, p, but information is either on $U_{i,no}$ (Brochure 11) or on $U_{i,fall}$ (Brochure 12).

Brochures 13 and 14 explore the idea that presenting evidence about how retired people, in average, under-evaluate risk, can trigger an upward revision of the perceived risk. Both brochures show the real and the perceived average levels of risk but they present theses levels to be either consistent or different. Formally, the previous model can be easily adapted to account for such a situation. The true risk, conditional on the available information when correctly processed, writes as previously:

$$p_i^t = p_{i,a}^t + \varepsilon_{i,a} \tag{2}$$

However, available information is imperfectly processed:

$$p_{i,a} = p_{i,a}^t + \chi_i \tag{3}$$

with the introduction of an additional term χ_i, distributed as $\mathcal{N}(0, \sigma_\chi^2)$ and meaning people know they might be wrong in their own risk's perception. This parameter cannot be measured, contrary to $\varepsilon_{i,a}$.

Treatments provide only information on the aggregate true level of risk $P_{B,true}$, on the aggregate perceived risk $P_{B,perceived}$ and, consequently, on the aggregate level of the bias which is equal to the difference between the perceived and the true risks: $P_{B,perceived} - P_{B,true}$. As previously, we assume that $P_{B,true}$ provides information on $\varepsilon_{i,a}$. The new feature is that $P_{B,perceived} - P_{B,true}$ provides information on the mistake parameter χ_i. Appendix shows that the revision formula for the expected risk is in this case:

$$E(p_i|p_{i,a}, P_{B,true}, P_{B,perceived}) = \alpha + \beta p_{i,a} + \lambda(P_{B,true} - P_{i,0}) + \mu(P_{B,true} - P_{B,perceived}) \tag{4}$$

The parameters of this model are functions of the second order moments of the distribution of $P_{B,true}$, $P_{B,true} - P_{B,perceived}$, $\varepsilon_{i,a}$, and χ_i, conditional on the available information. A reference case corresponds to the measurement models equal to the aggregation of individual models when, in addition, χ_i and $\varepsilon_{i,a}$ are independent. In this case, $P_{B,true}$ and $P_{B,true} - P_{B,perceived}$ provide selectively information on respectively $\varepsilon_{i,a}$ and χ_i. Parameters μ and λ would be both positive, as shown in appendix . The two treatments we consider show the same level for the aggregated true risk $P_{B,true}$, but different levels for the aggregated biais: $P_{B,true} - P_{B,perceived}$. In one case, the difference is large, reflecting a large bias. In the other case, the bias is close to zero. This setting allows us, therefore, to identify the two parameters λ and μ. Our expectation at the moment we design these interventions was, in accordance to the previous model, that the coefficient μ was positive: showing a large difference between true and perceived risks for a given level of true risk should increase the level of demand.

5 Data and compliance

5.1 Data

We use three different types of data. First, the data extracted from the files of the CNAV's Statistical Department (DSP) are used for stratification. In addition to gender, age and tax liability status, they also provide additional background information on professional trajectories and family situation. We have, for example, access to information on unemployment, sickness, and disability status when people were active. This allows us to check the balancing properties of our sample. We also use the corresponding set of covariates in our regressions to get additional power.

The second is a follow-up data set providing the newly registered individuals in the program. It covers our sample of 48,090 retired people over the 17 months period from 5 September 2011 to 15 April 2013. This administrative data provides our main outcome

variable.

We also implement a short survey for two main reasons. First, the survey collects more information about the experiment itself to understand how strongly individuals comply with it: do they remember receiving the brochure? Do they read it? Are they interested in the topic? These questions allow us to check if the brochures are considered as junk mail. The second reason for the survey is that we want to get additional information about the decision process itself: do people plan to adapt their housing over a longer period? What is the level of the perceived risk of fall? Is the fear of financial consequences a barrier to safety investment?[13] The survey is implemented on treated groups, including the control-brochure group but excluding the no-brochure group.

The sample size of individuals who were sent a brochure is 42,079. Of these, 3.3% are returned to us because the individual is no longer living at the given address. We do not use this information for the whole sample analysis, as it is not available for the no-brochure control group. However, we focus on the sample receiving a brochure when analyzing the survey data. This sample is composed of 40,670 individuals. We choose a mail survey that enables us to reach a large number of people at a low cost. A first wave of the survey is sent simultaneously with the second mailing of brochures.[14] Two weeks later, the questionnaire is sent a second time to the non-respondents. We obtain a response rate of 33.2%. Non-response is a primary concern in such a survey. To deal with this, we randomly called 15% of the non-respondents by phone. The response rate to the phone survey is 25.3%. Accounting for these different steps, we ultimately reach a global response rate of 50.1%.[15] Table B1 in Appendix B presents key information on the survey.

Non-response is especially important if it is correlated with the treatment. We use three

[13]We report results related to these questions? The survey also included additional questions: do retired people attempted to call the free number indicated on the brochure? If not, why (and a list of possible reasons), and do they intend to do it in the future. We do not report the impact of our treatments on these variables, because it does not add information. The questionnaire is available on demand

[14]This is obviously not perfect, but was decided for budget reasons, as we have to send 42,079 questionnaires.

[15]Statistics involving the survey data will use weights ω defined as $\omega = 1$ for respondents to the postal survey and the inverse of the sampling rate for respondents to the phone survey: $\omega = (40670 - 13499)/4075 = 6.67$.

main variables from the survey allowing us to give insights on safety investments, risk perception and financial barriers. Table B2 in Appendix B presents results of regressions of response variables for the three survey variables we consider on the whole set of treatment variables.[16] This table shows that there is no link between treatments and response rates for all treatments, except for the one offering a 100% subsidy for which we observe a large and significant difference.

Table 3 reports the balancing check results for our samples, based on the estimation of equation:

$$x = a + \sum_{k=1}^{14} b_k \times 1(\text{Receive brochure}k) + u \tag{5}$$

for each of the considered covariates. We simply report the result of the joint nullity test of all coefficients. Regressions are performed on the sample of 48,090 individuals.

Table 3: Balancing

	No-brochure group mean	**p-value**
Age 64 and below	20.9	100.0
Age 65–74	40.6	100.0
Age 75 and above	38.5	100.0
Women	54.9	100.0
Tax payer	80.2	100.0
Live in city	70.8	100.0
Couple	60.3	90.9
Nb of quarters of unemployment	9.9	6.4
Last Yearly Wage in 2011 euros	10,232	78.8
Had a spell of sickness when employed	42.1	42.9
Had a spell of invalidity when employed	6.2	21.7

Each line corresponds to the OLS regression of the considered variable on the set of 14 brochure dummies (see equation 5). The first column provides the mean in the control group (no brochure group), while the second provides the p-value of the test of the joint nullity assumption of all brochures' variable. Tests are performed based on the variance matrix of estimated parameters robust to heteroscedasticity.

Consistent with stratification by age, gender and tax liability status, the sample is perfectly balanced with respect to the corresponding categories. As shown in Table 3, the

[16]We therefore consider non-response variables that are specific to each of our three variables. They therefore include the global non-response variable to the survey, but also account for partial non-responses which are variable specific.

balancing property is also satisfied for the observable variables. On the considered variables, the joint nullity test is rejected at the 10% level only for the cumulated number of quarters with unemployment. We observe good balancing properties for all other variables.

5.2 Compliance

A potential risk of our experiment is that the treated retired people consider the sent brochure as junk mail; therefore, they may not open and read it. We have several reasons to consider it is not the case.

First, brochures are sent using the official logo of the National Old-Age Insurance Fund. These mails are normally related to pensions, and retired people take them very seriously. We decide, however, to implement a survey in order to collect additional information on this question. One crucial piece of information is the response rate to this survey: as explained before, the survey is sent with the treatment. The response rate to the survey gives a serious indication if people are opening the sent mail. Considering only the respondents to the mail survey, the response rate is 33.2%. We decide to add several questions directly related to the experiment (see section 5.1): *The retirement agency sent you a brochure two weeks ago, did you receive it? Did you read it? Are you interested in the type of services offered?*

Results are presented in Table 4. Among respondents, 66.4% of the retired people remember receiving a brochure, 59.7% remember reading it, and 15.8% profess to be interested in the offered services. This evidence allows us to discard junk mail as a major drive of our results.

We also compute a compliance rate defined as opening the sent mail at least once. As can be seen from Table 4, 33.2% of retired people respond to the mail survey. This is therefore the lower bound of our compliance rate. Under the assumption that opening the first and the second mails are identically distributed we can obtain easily an estimated compliance rate of 44%.[17]

[17]This is just $P(\text{Open } 1^{st} \text{ mail} \cup \text{Open } 2^{nd} \text{ mail}) = P(\text{Open} 1^{st} \text{ mail}) + P(\text{Open } 2^{nd} \text{ mail}) - P(\text{Open } 1^{st} \text{ and } 2^{nd} \text{ mail})$. The share of retired people responding to the mail survey is 33.2% and the share of them answering "yes" to the question about remembering receiving the brochure two weeks ago

Table 4: Compliance

	Weighted sample	Mail respondents
Response rate	50.1	33.2
Do you remember receiving a mail from the CNAV two weeks ago?	66.4	75.2
Did you open it?	59.7	66.4
Are you interested in the offered services?	15.8	15.1

The first column provides the average using the mail survey and the phone survey on a random sample of non-respondents. The first line gives the response rate. The three following lines report answers to questions about remembering the mail, opening it and being interested in its content.

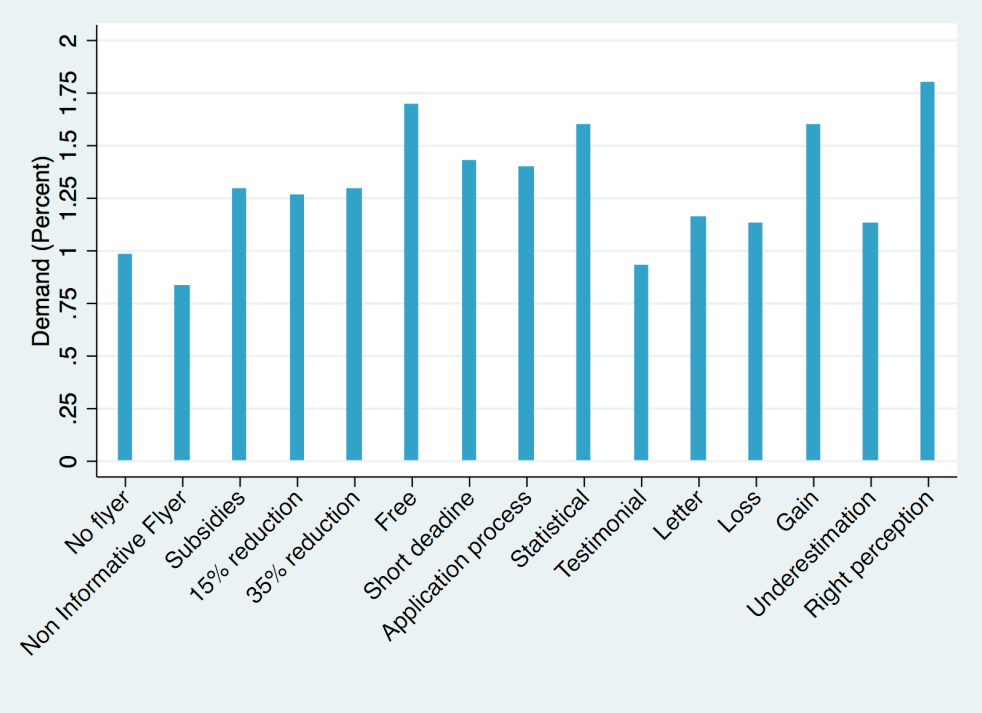
6 Results

6.1 Effect on demand

We first consider the impact of treatments on demand. Our main outcome variable is the demand for the prevention program addressed to the National Old-Age Insurance Fund over a 17-month period from 5 September 2011 to 15 April 2013. Figure 1 provides an overview of our results. Each bar corresponds to a treatment group, also including the control groups, and shows the average take-up for the prevention program.

is 66.4% (see Table 4). The probability to open both mail is accordingly 0.332*0.664. A raw estimate of opening at least one time the sending mail would be 0.332+0.332-0.332*0.664=44.3%

Figure 1: Demand in each group



The figure presents the share of retired people in each group signing for the prevention program during the 17 months period from 5 September 2011 to 15 April 2013 (in %).

The first remark is that the level of demand for the prevention program stays very low. All the tested treatments have a small absolute effect. Take-up never exceeds 1.8%, meaning that none of the implemented treatments succeeds in solving the low demand problem. Even in the group receiving the brochure that offers a 100% subsidy, the take-up remains low. However, despite a limited absolute impact, the relative effect is quite large. Achieving a 1.8% take-up represents more than double the level of demand in the control group. The previous graph clearly shows that there is heterogeneity among treatments. Moreover, heterogeneity is observed within the two different categories of treatments (information and cost treatments).

Table 5 presents OLS regression's results of the model:

$$y = a + \sum_{k=2}^{14} c_k \times 1(\text{Receive brochure } k) + xd + u \tag{6}$$

in which y is the take-up for the program, and x are covariates listed in Table 3.

Because the level of demand in the no-brochure group and in the control group are very close, we merge these two groups into a single control group of 9,017 retired people.[18]

In this experiment, we test 13 different treatments. We account for multiple testing by controlling for the False Discovery Rate, following the procedure described in Benjamini and Hochberg (1995). We choose to control for the False Discovery Rate instead of for the Family Wise Error Rate, because our experiment is mainly an exploration of different ways to boost the demand for prevention. In such a case, it is more adapted to control for the False Discovery Rate rather than for the probability that there is at least one false discovery, which is what the Family Wise Error Rate does. (See Anderson (2012) for a presentation and a discussion of different methods to account for multiple testing as well as an application to early childhood program).[19] The Benjamini–Hochberg method requires p-values to be either independent or positively correlated. This is the case here: retired people are randomly assigned to one of the 14 treatment groups. Therefore, the different estimated parameters $\overline{y}^{T=k} - \overline{y}^{T=0}$ are only correlated through the control group mean $\overline{y}^{T=0}$, and are obviously positively correlated.

Instead of using adjusted p-values, we use the sharpened p-values proposed in Benjamini et al. (2006), which are also suitable in our case and have larger power. Here, we have only one outcome variable but 14 different treatments, including the control group. We control for the False Discovery Rate among all the 13 estimated impacts. The implied adjustment in p-values is important: the smallest adjusted p-value, for example, is approximately equal to 13 times the smallest unadjusted p-value. The sharpened p-value method limits the loss of power due to the adjustment for multiple testing, but the loss of power still remains large.

We also explore heterogeneity of results according to income, gender, and age. We consider the whole set of all estimated p-values, therefore considering the 26 estimated

[18]The take-up in each of the no-brochure control group and the control-brochure group are respectively 0.982 and 0.832, and their sizes are 6,011 and 3,001. We accept the assumption of a same average in both groups.

[19]Our implementation uses the programs available at https://are.berkeley.edu/∼mlanderson/ARE_Website/Research.html.

p-values.[20] However, the heterogeneity analysis implies necessarily to loose statistical power. We also test specific assumptions. For cost brochures, we analyze the impact of imposing a short deadline. We test the impact of a 20% subsidy conditional on a short deadline and two unconditional subsidies of 15% and 35%. As $0.2 = 0.75 \times 0.15 + 0.25 \times 0.35$, we test the effect of a short deadline by comparing the coefficient of the treatment imposing a short deadline with the linear combination of the two unconditional subsidies, assuming local linearity of the effects. We also test the role of framing: are the effects of treatments providing information about the risk of falling the same (coefficients c_8 to c_{10})? Results are presented at the bottom of the table 5.

Finally, the table 5 presents results for different specifications or selected sub-samples. The two first columns consider the whole sample. We also examine the heterogeneity of results with respect to income. This dimension is particularly important because the existing subsidy schema is defined as a function of income. We have only information on the last received wage. This information is relevant because it determines the level of the pension, but it is incomplete and misses several important components of income, like assets earnings for example. The two last columns provide results for sub-samples, splitting the initial sample according to the median level of the last received wage.

Cost treatments

The demand for the program depends on the offered subsidy. The 100% subsidy significantly increases the level of demand. However, the impact is not huge: the take-up increases by 0.77 percentage point from a level of 0.93 in the control group. In relative terms, however, this represents an increase of 80%. What does such a limited absolute impact tell us about the price sensitivity of the demand for safety investments? An important part of the answer depends on the proportion of the population who open and read the sent brochure. This proportion is imperfectly known, but the discussion in section 5.2 shows that a reasonable

[20] Splitting the sample in two sub-samples generates two sets of independent p-values, therefore complying with requirements of the method.

order of magnitude is 50%. This means that an upper bound of the impact is 0.77/0.5= 1.54 percentage points increase. The impact remains very small and far from what was initially expected. Our result clearly shows that reducing the price is not enough to modify the investment's decision. This is in sharp contrast with previous results. As previously discussed, previous evidence has shown that demand strongly depends on prices and that large gains are associated with offering the investment for free.

As explained previously, however, we cannot directly infer the functional form of the demand curve, because the basic subsidy scheme is based on income. Changes in cost vary from one household to another, depending on their income. Partial subsidies can also bind the maximum 100% level. Income is, therefore, one interesting heterogeneity dimension. We know the last wage of retired people, used to calculate the level of social contributions. We split the sample according to the median level of the last contributing wage. Results are presented in the two last sets of columns in Table 5. They clearly show different patterns concerning the sensitivity of demand to subsidies. We do not observe a significant impact of the 100% subsidy for retired people for whom the last wage is below the median level. Low-income people already have access to generous subsidies, and the potential gains associated with the offered additional subsides are consequently limited. On the contrary, the treatment offering a 100% subsidy has a significant and large effect on demand from the richest part of our sample.

We then focus on the impact of partial subsidies. We test four different treatments proposing partial subsidies: a treatment that simply recalls the existing subsidy scheme, two treatments that propose additional subsidies of 15 or 35%, and a last treatment that proposes a 20% additional subsidy conditional on a commitment in the 15 days. Among all of these brochures, none has a significant impact when accounting for multiple testing. Existing evidence suggests that there could be large differences between treatments that fully and partially subsidize investment. One interesting comparison is between the impact of the 100% subsidy and partial subsidies, especially the 35%, which is the largest one after proposing the program for free. This treatment has a 0.37 percentage point impact on

the demand, which represents a 0.4 percentage point reduction in comparison with the full subsidy. For the richest retired people, we do not observe any impact of a 35% additional subsidy. This result makes a sharp contrast with the large effect of the 100% subsidy on this subpopulation.

Brochure 6 combines partial subsidy with a short deadline. Offering a 20% rebate conditional on a registration in the 15 days increases the take-up by 0.50 percentage points (a 54% increase). This impact is only significant at the 10% level when accounting for multiple testing. To test the specific impact of imposing a short deadline, we would like to compare the impact of conditional and unconditional subsidies of the same level. However, we can only compare the impact of the conditional 20% subsidy to an appropriate linear combination of impacts of the 15% and 35% unconditional subsidies, assuming linearity of the impact of partial subsidies.[21] Estimates for the impact of unconditional subsidies are presented in Table 5 and lead to a value of 0.34 percentage points for such a linear combination. Compared to the impact of the conditional subsidy (0.50), it represents an increase of 0.16 percentage points. The assumption of no effect of the treatment imposing a short deadline is largely accepted, meaning that time inconsistency is not the first explanation of the low level of demand for prevention.

Finally, reducing non-monetary costs also increases demand for the prevention program. Our treatment consists of explaining the different steps to register for the program. This treatment leads to an increases of the demand by 0.47 percentage points, which represents a 53% increase. This effect is, however, only significant at the 10% level when we account for multiple testing. This is a sizable increase. which represents 60% of the increase achieved by offering a 100% subsidy. This echoes results obtained in the literature showing that time costs matter in health investment decisions.

In summary, the demand seems to be sensitive to prices, but the impact is far behind what we initially expected. We find evidence for a specific effect of free services. Partial

[21] Such a relevant combination of impacts of partial subsidies is $\tau_{0.15} \times 3/4 + \tau_{0.35} \times 1/4$, where τ_r stands for the impact on take-up of an unconditional rebate of r. See footnote 12

subsidies seem to be ineffective. Apart from direct price effects, we also find some weak impacts related to imposing deadlines or making the application process easier.

Information treatments

The first and most surprising result concerning information treatments is that they are actually at least as powerful as a 100% subsidy. The largest impact we obtain is a 0.87 percentage point increase (a 94% increase). More generally, information seems to be a key determinant of demand for prevention. Some information treatments have a significant impact on demand, even after controlling for multiple testing (Table 5). However, the treatment effects that we measure for the different information brochures are highly heterogenous. Slightly changing the way information is provided can lead to large changes in demand. This makes information a difficult tool to implement effectively.

The first three information treatments provide the same message about adapting home, but are framed differently. The first treatment is based on graphs and figures, the second on a testimonial, and the last takes the form of a personalized letter. The "statistical" treatment has the largest impact, achieving an impact of 0.67 percentage points, which represents 87% of the free coverage's impact. By contrast, the treatment based on a testimony has a very low impact on demand for prevention.

Another group of treatments provides information on the consequences of a fall. We test two different treatments. The first emphasizes gains associated with remaining self-sufficient at home, while the second emphasizes losses associated with disability. Results are presented in Table 5. The first treatment emphasizing gains has a significant impact on demand. The second, emphasizing losses associated with a fall at home, has no effect. These results are different from what we initially expected when designing these treatments. Following (Tversky and Kahneman, 1991) and the loss aversion theory, we expected a larger impact of the treatment emphasizing losses. However, the model developed in section 4 shows the crucial role played by the reference level in the revision mechanism. The baseline level corresponds to what retired people initially expect concerning the probability of falling, before being

treated. If retired people expect becoming dependent, the treatment emphasizing losses (Brochure 11) does not lead to revision mechanism. On the opposite, in this case, a treatment emphasizing gains associated with remaining self-sufficient could have a large impact on demand.

The last type of treatments provides information on the average perceived and true rates of falling. The average true rate of falling is presented as high in both treatments, but the average perceived rates are different in the two brochures. We find a large impact for the treatment presenting the two rates as equal (Brochure 14). In this group, we measure an increase of 0.87 percentage points, which is highly significant. It represents the largest impact among all tested treatments. Brochure 13, presenting the two rates as different, has a moderate and non-significant impact on demand. Therefore, showing a large positive difference between aggregated true and perceived risk leads to a reduction in the demand for the program. In the model presented in section 4, retired people update their beliefs using aggregated information. Equation (4) shows that the updated risk depends on the level of the true aggregated risk with a coefficient λ and also on the difference between the true and perceived aggregated risks with a coefficient μ. Our setting introduces two different manipulations on aggregated risks and therefore allows to identify both the λ and μ parameters of the model. Our results show that the coefficient μ is negative: the difference between take-up for brochures 13 and brochure 14 is actually negative (-0.67).

We initially expected that showing a large difference between the true and perceived rates of falling would lead people to revise their perceived probability of falling more strongly. The model also shows that the coefficient μ will be positive if differences between the two aggregated risks allow retired people to update the "mistake" component in their perceived risk. Results are at odds with such a framework: fear of mistakes in the risk's appreciation does not seem to drive the risk assessment. The model developed in Appendix A.2 also shows that under another polar case, the coefficient μ is likely to be negative: when true and perceived aggregated risks are considered as providing independent knowledge on the same unknown component of risk. Moreover, the model shows that providing information on

just one aggregated risk (Brochure 8) is predicted to have a smaller impact than providing consistent information on the true and aggregated risks (Brochure 14).

Our information treatments differ in the ways to deliver the same message about the risk of falling and their consequences. There is a sharp contrast with cost treatments, which mostly differ in their intensity. Here it is the same message, delivered with the same intensity, but in which the emphasis is put on different aspects. One notable feature of the estimated impacts is that they substantially differ from one another. We formally test the assumption that all seven information treatments have the same impact. Results appear on the line labeled "Homogenous information". For both specifications, with and without covariates, we strongly reject the assumption that treatment impacts are identical.

The two last sets of columns in Table 5 and Table 6 analyze the heterogeneity of our results. Table 5 analyzes heterogeneity according to the last contributing wage. As already discussed, the most interesting change is the sensitivity to cost treatments. The effects are larger for retired people with high incomes. This result can be explained by the existing high level of subsidies for low income people. However, as can be seen from the table, the assumption that the whole set of coefficients is the same for these two groups is largely accepted. The two first sets of columns present results according to age. We define young retired people as people age 70 or below and senior retired people aged 71 or above (the median age is 71). None of the tested treatments has a significant impact on young retired people. On the contrary, all treatments that have a significant impact for the whole sample have also a significant impact on senior retired people. Differences between the two sets of coefficients, however, are not large enough to be statistically significant. The last two columns of table 6 present results by gender. These columns show substantial differences according to gender; the hypothesis of a same response profile between gender is clearly rejected. The level of demand is lower for men (0.39%) than for women (1.38%). Men are highly sensitive to price without differences between the level of subsidies. By contrast, women only respond to large price reductions. We note also differences concerning the effects of information treatments. Women are highly responsive to information, especially to the

treatment emphasizing a right risk perception. The statistical information treatment has also a positive impact on women. Men do not respond as strongly to information treatments.

Table 5: Demand take-up

	Whole sample							
	No covariates		Covariates		Low Income		High Income	
	coef std	pval *fdr*	coef std	pval *fdr*	coef std	pval *fdr*	coef std	pval *fdr*
Effect of cost treatments (relative to non-informative brochures)								
Present subsidy scheme	0.37	11.2	0.35	12.4	0.12	70.2	0.59	7.2
	(0.23)	*12.0*	(0.23)	*11.3*	(0.32)	*62.1*	(0.33)	*23.9*
Add a 15 % extra subsidy	0.33	14.4	0.34	13.0	0.54	12.4	0.12	66.3
	(0.23)	*12.6*	(0.23)	*11.3*	(0.35)	*26.4*	(0.27)	*61.0*
Add a 35 % extra subsidy	0.37	11.2	0.36	11.2	0.72	5.3	-0.01	96.7
	(0.23)	*12.0*	(0.23)	*11.3*	(0.37)	*23.9*	(0.26)	*66.4*
Free	0.77	0.3	0.77	0.3	0.61	9.9	0.93	0.9
	(0.26)	*1.8***	(0.26)	*1.7***	(0.37)	*26.4*	(0.36)	*12.6*
Add a 20 % extra subsidy	0.50	3.7	0.52	3.1	0.39	26.0	0.63	5.2
with a short deadline	(0.24)	*7.1**	(0.24)	*5.9**	(0.35)	*33.2*	(0.33)	*23.9*
Explain the registration process	0.47	4.9	0.49	3.9	0.38	26.1	0.60	6.9
	(0.24)	*8.0**	(0.24)	*6.3**	(0.34)	*33.2*	(0.33)	*23.9*
Time limit matters (p-value %)	55.7		53.7		62.3		12.3	
Effect of information treatments (relative to non-informative brochures)								
Risk of falling: statistical	0.67	0.8	0.67	0.7	0.57	11.1	0.77	2.5
	(0.25)	*2.2***	(0.25)	*2.4 **	(0.36)	*26.4*	(0.34)	*23.9*
Risk of falling: testimonial	-0.00	100.0	0.00	99.0	-0.15	59.7	0.16	55.9
	(0.20)	*44.5*	(0.20)	*43.8*	(0.29)	*55.9*	(0.28)	*54.6*
Risk of falling: letter	0.23	29.1	0.22	31.0	0.09	77.8	0.35	24.5
	(0.22)	*22.2*	(0.22)	*23.1*	(0.32)	*63.7*	(0.30)	*33.2*
Consequences: emphasizes loss	0.20	36.0	0.20	36.9	-0.06	83.2	0.46	14.1
	(0.22)	*22.2*	(0.22)	*23.1*	(0.30)	*66.4*	(0.31)	*26.4*
Consequences: emphasizes gain	0.67	0.8	0.66	0.8	0.69	6.3	0.63	5.7
	(0.25)	*2.2***	(0.25)	*2.4***	(0.37)	*23.9*	(0.33)	*23.9*
Risk of falling: underestimation	0.20	35.9	0.20	37.0	0.11	73.4	0.28	33.5
	(0.22)	*22.2*	(0.22)	*23.1*	(0.32)	*62.1*	(0.29)	*33.2*
Risk of falling: right perception	0.87	0.1	0.85	0.1	1.16	0.5	0.50	11.7
	(0.26)	*1.3***	(0.26)	*1.7 **	(0.41)	*12.6*	(0.32)	*26.4*
Homogenous information (%)	3.1		3.4		4.0		79.0	
Constant	0.93		0.93		1.11		0.75	
	(0.10)		(0.10)		(0.15)		(0.13)	
13 coefficients equal (%)[a]						54.6		
Observations	48,090		48,090		24,694		23,396	
Control Variable	No		Yes		Yes		Yes	

OLS regression of equation (6). Each specification presents first coefficients and standard errors and then standard and FDR adjusted p-values. The first specification does not introduce covariates, the second specification does (variables listed listed in Table (3)), the two last specifications present results for low and high income sub-populations. Test results only provides p-values (in %). The assumption "Homogenous information" corresponds to a same effect for the seven information brochures. The assumption "Time limit matters" corresponds to the restriction in footnote 21.

a p-value of the test that impacts are the same among the two sub-samples examined.

Robust standard errors are in parentheses

Table 6: Demand take-up by wage and gender

	Young		Senior		Women		Men	
	coef std	pval *fdr*	coef std	pval *fdr*	coef std	pval *fdr*	coef std	pval *fdr*
Effect of cost brochures (relative to non-informative brochures)								
Present subsidy scheme	0.22	38.7	0.49	18.8	-0.00	99.3	0.78	1.1
	(0.26)	*57.7*	(0.37)	*51.3*	(0.33)	*69.0*	(0.31)	*5.9**
Add a 15 % extra subsidy	0.31	23.5	0.39	28.5	0.03	92.2	0.72	1.6
	(0.26)	*53.1*	(0.36)	*54.1*	(0.33)	*69.0*	(0.30)	*5.9**
Add a 35 % extra subsidy	0.48	9.7	0.27	43.4	0.43	24.2	0.27	26.2
	(0.29)	*30.1*	(0.35)	*62.3*	(0.37)	*28.2*	(0.24)	*28.2*
Free	0.44	12.0	1.09	0.9	0.70	7.1	0.87	0.6
	(0.28)	*34.0*	(0.42)	*8.3**	(0.39)	*12.3*	(0.32)	*5.4**
Add a 20 % extra subsidy	0.12	60.9	0.87	2.9	0.15	66.7	0.95	0.3
with a short deadline	(0.24)	*81.8*	(0.40)	*14.6*	(0.34)	*69.0*	(0.33)	*4.8**
Explain the registration process	0.18	47.4	0.78	4.7	0.29	40.4	0.73	1.5
	(0.25)	*62.3*	(0.39)	*20.0*	(0.35)	*43.2*	(0.30)	*5.9**
Time limit matters (%)	41.0		24.5		96.7		36.7	
Effect of information brochures (relative to non-informative brochures)								
Risk of falling: statistical	0.19	45.1	1.13	0.6	0.98	1.6	0.29	23.5
	(0.25)	*62.3*	(0.41)	*8.3* *	(0.41)	*5.9**	(0.24)	*28.2*
Risk of falling: testimonial	-0.18	35.1	0.19	57.9	-0.22	47.0	0.27	25.7
	(0.19)	*54.2*	(0.35)	*81.0*	(0.31)	*49.0*	(0.24)	*28.2*
Risk of falling: letter	0.10	68.1	0.35	33.0	-0.12	71.0	0.64	2.8
	(0.24)	*86.4*	(0.36)	*54.1*	(0.32)	*69.0*	(0.29)	*6.5* *
Consequences: emphasizes loss	0.26	31.8	0.15	64.9	-0.12	71.7	0.57	4.4
	(0.26)	*54.1*	(0.34)	*85.1*	(0.32)	*69.0*	(0.28)	*8.9**
Consequences: emphasizes gain	0.26	31.2	1.02	1.2	0.67	8.1	0.64	2.8
	(0.26)	*54.1*	(0.41)	*8.3* *	(0.38)	*13.0*	(0.29)	*6.5**
Risk of falling: underestimation	-0.04	84.4	0.42	24.3	0.20	56.7	0.19	40.9
	(0.22)	*100.0*	(0.36)	*53.1*	(0.35)	*60.8*	(0.23)	*43.2*
Risk of falling: right perception	0.56	6.0	1.09	0.9	1.31	0.2	0.27	26.7
	(0.30)	*22.0*	(0.42)	*8.3**	(0.43)	*4.8* **	(0.24)	*28.2*
Homogenous information (%)	26.7		14.0		0.4		71.0	
Constant	0.53		1.28		1.38		0.39	
	(0.11)		(0.16)		(0.17)		(0.10)	
13 coefficients equal [a] (%)		58.9				2.8		
Observations	22,759		25,331		26,423		21,667	
Control Variable	Yes		Yes		Yes		Yes	

See note in Table (5). The first two specifications consider retired people according to their last wage being below or above the median; the two last specifications separately consider women and men.

6.2 Effect on risk perception, financial barriers and perceived needs

Our main outcome variable does not allow us to answer central questions related to the investment decision process. The first set of questions concerns the scope of the demand for investments. Registration into the targeted program might not catch all forms of safety investments or all planned investments, although we consider registration during a long time after the experiment (17 months). Retired people might decide to engage in safety investments on their own. They might also have decided to invest in prevention but have postponed implementation. The second set of questions is related to the mechanisms behind the investment decision. The simple model we developed shows that risk perception and costs are important determinants of the investment's decision. We expect risk perception to be impacted by information treatments and financial barriers reduced by cost treatments. We analyze responses to the survey mailed with the brochures. The same specification as before is used on the sample of retired people who answered the survey. As explained in section 5.1, the survey was sent by mail. In order to limit non-response bias, we then survey retired people by phone on a random sample of non-respondents. Classically, to account for this two-step procedure, we use weights equal to 1 for respondents to the mail survey and to the inverse of the sampling rate among non-respondents for respondent to the phone survey.[22]

First, we focus on how people plan their investment decisions. The survey contains a question on the timing of investment: *Do you think you will need to make investments in your dwelling?* We aggregate responses into four modalities: "No, already done"; "Yes, will adapt in 1–2 years"; "Yes will adapt in 3–10 years"; and "Will do later or never". This variable allows us to consider all prevention investments. The timing of decision is also an issue: people might decide to invest but postpone their decision. Table 7 reports results for each treatment group. Each column corresponds to results obtained when considering one of the grouped items as an outcome variable. As all four items sum to 1, the sum of

[22]See, for example, Kling et al. (2007).

impacts through the four considered variables for each treatment is zero and constants sum to 1. First, 86.5% of retired people plan no safety investment in the control group, meaning that the level of demand for prevention is very low. We consider that a treatment leads to an increase of the long-run demand if it increases the intermediate modalities: "Yes, will adapt in 1–2 years" and "Yes, will adapt in 3–10 years", and it therefore decreases the sum of the two extreme modalities : "No, already done" and "Will do never or later." The signs of coefficients are broadly consistent. Almost all coefficients for items 'Will invest later or never" and "No, already done" are negative. Many coefficients are positive for the two intermediate items. The assumption we test simply corresponds to a null effect across all the 4 modalities for a given brochure compared to the control brochure. The result of this test appears in the last column. We report the usual p-value of the test as well as the adjusted p-value, accounting for multiple testing using the same False Discovery Rate adjustment as before. The unadjusted p-values are all above 5%, and there are only two p-values below 10%: the statistical information brochure (8) and the brochure emphasizing loss (11). All adjusted p-values are equal to 100%. Moreover, the nullity test of all coefficients is largely accepted. The conclusion is, therefore, that we are unable to detect any change in the planned demand.

Are these results consistent with our previous findings? On one hand, we measure the demand through the program channel over T periods: y_T^p and, on the other hand, the expected demand in $t = 0$ over these same T periods but through all channels: $y_{0,T}^e$. The total demand y_T is the sum of the demand through the program channel and through other channels, y_T^{np}: $y_T = y_T^p + y_T^{np}$. It is also equal to the sum of the expected demand and a shock: $y_T = y_{0,T}^e + \varepsilon$. We observe the impacts on the demand through the program (y_T^p) but not on the expected demand ($y_{0,T}^e$). There are several potential explanations for this apparent contradiction, but none of them is fully satisfactory. First, it could be related to a selection effect of survey respondents. However, as Table B2 in Appendix B shows, results are broadly the same when using the full sample and the sample of survey respondents. Another explanation could also be a reduced statistical power when using the sample of survey respondents: indeed, stan-

dard errors are 1.5 to 3 times larger for results obtained on survey respondents.[23] However, the two main impacts [100% subsidy (brochure 5) and information on perceived and true risk (brochure 14)] still remain significant in the analysis of demand on the selected sample, so the power loss due to sample size reduction is not the main explanation.[24] A third explanation would be related to a deadweight effect: retired people use the opportunity offered by the experiment to realize investments already planned. In the previous equations, it could be the case if there is a positive impact on y_T^p but a corresponding negative impact on y_T^{np}. This explanation could particularly make sense for the treatment offering a 100% subsidy. Indeed, this treatment imposes the investment to be implemented through the program. It is, however, less relevant for information treatments, and, as emphasized previously, one of our main findings is the large impact of some information treatments. A last potential explanation corresponds to the fact that the difference between the expected demand and the realized demand ε can be related to events occurring at home; for example, the experience of an "almost fall." These events might have triggered home-safety investments for retirees retired people might have use the program for that.

The survey allows us to also analyze mechanisms behind investment decisions. Our model considers two key determinants of demand: risk perception and costs. Regarding the level of perceived risk, we focus on the question: *Does your dwelling present potential risks of falling?* and its four possible responses – "*Definitely not*"; "*Probably not*"; "*Yes, maybe*"; and "*Yes, definitely.* For financial barriers, one question concerns the reasons why people do not call the indicated number. A set of potential reasons, including the fear of financial consequences, is listed. Other mentioned reasons are the lack of time, forgetfulness, and other various ways to approach the idea that people did not perceive safety investments as needed.[25] Our outcome variable is equal to one if people declare they do not call for financial

[23] See column 4 and 5 of Table B2

[24] Another potential explanation related to power can be that the variable in the survey is measured with error: we measure $y_{0,T}^{e,m} = y_{0,T}^{e} + e$, where e is a measurement error. It is widely known that such noisy measure lead to loss of power.

[25] Table B3 presents the corresponding results.

reasons. [26]

Results about risk perception are reported in the first four columns of Table 8. Our treatments clearly have an impact on risk perception. However, this effect is mainly a reduction of the share of retired people who consider their home is not risky at all. One first result is that a substantial share of retired people consider their home as risky: 14.2% consider their home is probably risky, and 2.6% as highly risky. A large majority, however, do not perceive their home as risky: 44.9% declare it is not risky at all, and 38.3% consider it is probably not risky. The second important result is that treatments have an impact on the distribution of perceived risks. We test for the joint nullity of all treatments. This assumption is largely rejected. As expected, effects are essentially observed for information treatments. [27] The effect is large for the two treatments focused on perceived risks (Brochures 13 and 14). Treatments emphasizing gains or losses and the testimony have also a significant impact. However, the statistical treatment, which has an impact on demand for the program, has no impact on perceived risks. Effects are mainly located on the left tail of the distribution. We observe a reduction of the proportion of retired people considering their home "Definitely not" risky, which is compensated by an increase of the proportion considering their home as "Probably not" risky. Impacts are quite substantial: the initial share of people who do not consider their home as risky is 44.9%. Brochure 14 achieves a reduction of this share by 10.5 percentage points, which represents a 23.3 percent reduction. We do not observe major changes for the two other modalities.

Results about financial barriers are presented in the last column of the Table 8. Financial consequences represent a barrier for 5.3% of the respondents. Among the other potential reasons for not calling, 11.9% of retired people (in the control group) declare a "lack of time

[26] In the survey, retired people are first asked if they called the number indicated in the brochure. In case they did not call, a further question asks if they intended to call. In case they did not call, or not intend to call, the retired people are then asked if this was because they feared financial consequences. We use this last question. It should be missing for retired people who called or intended to call. But retired people did not always follow the conditionality. They answered the question, even if they were not supposed to. The variable we consider ignores these responses. See Table B3 in Appendix B.

[27] Two cost treatments have (surprisingly) a significant impact on this outcome variable: the treatment providing only information on the offered financial support and the treatment offering an extra subsidy conditional on a commitment in the 15 days.

or forgetfulness," and 80.3% "do not perceive any need of such investment."[28] Financial reasons do not represent the main barrier to invest in prevention. We expected a negative effect of cost treatments on this outcome. This is, however, not what we observe in our data: all cost treatments have a positive (but not significant) impact on this outcome. Moreover, some of the information treatments have a positive and significant impact on this variable. It is the case for the testimony and statistical information. The magnitude of impact is also substantial. For example, the testimony (Brochure 9) has an impact of 5.0 percentage points, which almost doubles the average in the control group (5.3%).

7 Conclusion

In this paper, we report results from a large field experiment exploring the main determinants of preventive health investment behaviors among retired people. Falls at home are one of the major causes of dependency for the elderly. This experiment was first motivated by a major concern in many developed countries: the increasing dependency risk among retired people. While prevention is recognized as an efficient way to substantially reduce the occurrence of home accidents, senior citizens are quite reluctant to undertake preventive investments. The French National Old-Age Insurance Fund has developed a dedicated prevention program for which the level of demand remains very low.

Our experiment consists of exposing random representative groups of retired people to different incentives to invest in prevention. These incentives are sent using brochures, each emphasizing one of the possible determinants of investment behavior. We focus mainly on cost reduction and information provision. We do not focus on the act of investing itself, but on the first step: the registration for the dedicated prevention program. In addition, we also consider safety investments planned in the future and the perception of risk, measured through a specific survey. The brochures were mailed to retirees by the organizations who pay their pensions. Our analysis shows that about 50% of people read the brochure.

[28] See Table B4 in Appendix B.

The registration rate for the program in the control group is very small. Only 1% of retired people in the control group actually register for the program. The absolute impact on registration for our treatments is low. At most, treatments raise demand by only 1 percentage point. Similarly, we do not see program impacts through the survey data which provides additional information on planned safety investments. Brochures were sent to the whole population in Île-de-France, without any specific targeting. Targeting could improve average impacts but even in this case impacts would remain small. Using our survey data, we can evaluate that approximately 20% of dwellings of retired people present some risk. If new registrations due to the intervention were concentrated on this population, the impact would be roughly 5 percentage points. This is larger, but remains nevertheless small in absolute terms.

Could it be that our treatments are too weak? We do not believe this is the case for all our treatments. The brochure making investments free is indeed a substantial treatment. And there would not be that much room to make cost treatments stronger. Yet, even this treatment?s impact remains small. These results point to the limits of financial incentives in the whole population of retired people and this is in sharp contrast to the existing results in the literature on the effect of financial incentives on health behaviors. These types of interventions have usually been found to be effective in many different contexts. Yet we find that among retirees, they have very little effect.

Treatments which are not subsidies can, however, be considered as weak.[29] However, some of our information treatments showed substantial impacts, increasing registration for the program by almost one percentage point, doubling the baseline rate. This result is a promising avenue, as these treatments could be easily made stronger. In addition, our simple models demonstrates that the impact of such information treatments are highly dependent on both the magnitude and even the sign of individual priors about risk. This relatively

[29]They are stronger than the flyer treatment in Banerjee et al. (2015), which only indicated where to buy double fortified salt, but clearly weaker than other treatments, which consisted of the diffusion of a 20-minutes video on the benefits of fortified salt. This last treatment achieved a substantial impact of a 5 percentage point increase in the rate of people using the salt.

low average absolute effect masks the strong heterogeneity of individual impacts. One other important finding in our experiment is that impacts are highly dependent on the way the information is provided. This echoes results from Bertrand et al. (2010), who show the crucial role of framing. In our experiment, the homogeneity assumption between the different framing strategies is mostly rejected.

One other weak treatment is the non-monetary cost intervention. This brochure only attempts to make the investment process within the program easier to understand. It has a non negligible impact: 60% of the impact achieved by a 100% subsidy can be obtained by simply providing information on the application process for the program. This result echoes results obtained in other papers about the role of time costs in health investments, for example in Ashraf et al. (2014), in which the treatment only mentioned that waiting time at family planning sessions do not exceed one hour. Yet, our brochure itself clearly shows that this process is incredibly complicated. Obviously, only making the demand process easier represents a significant policy avenue.

Our main outcome variable is the registration for the program, which is only a first step. There are several additional steps before arriving at the investment stage. As shown by our non-monetary cost intervention, the length and complexity of this process is a substantial barrier. This may explain why impacts of subsidies may be very small in this context. Even when the investment is totally free, retirees face not only the decision to adapt their home, but also the engagement in a long-term project.

Table 7: Impact of treatments on anticipation about needs

Do you think you will need to make investments in your dwelling?	No, already done	Yes, will adapt in 1-2 years	Yes, will adapt in 3-10 years	Will do later or never	pval *fdr*
Effect of cost treatments (relative to non-informative brochures)					
Present subsidy scheme	-2.0	0.8	1.7	-0.5	67.1
	(3.5)	(1.4)	(1.6)	(3.6)	*100.0*
Add a 15 % extra subsidy	1.5	-0.2	2.9	-4.1	35.1
	(3.5)	(1.2)	(1.8)	(3.6)	*100.0*
Add a 35 % extra subsidy	-1.1	-0.0	2.2	-1.0	64.8
	(3.5)	(1.2)	(1.7)	(3.6)	*100.0*
Free	-0.2	-1.0	1.5	-0.3	67.8
	(3.5)	(1.2)	(1.6)	(3.6)	*100.0*
Add a 20 % extra subsidy	-1.4	-0.4	2.3	-0.5	63.8
with a short deadline	(3.5)	(1.3)	(1.8)	(3.6)	*100.0*
Explain the registration process	-0.9	1.6	1.2	-1.8	63.0
	(3.5)	(1.5)	(1.6)	(3.6)	*100.0*
Effect of information treatments (relative to non-informative brochures)					
Risk of falling: statistical	5.6	-0.1	2.9	-8.4	8.5
	(3.6)	(1.1)	(1.8)	(3.6)	*100.0*
Risk of falling: testimonial	1.0	0.2	2.1	-3.3	58.3
	(3.5)	(1.3)	(1.7)	(3.6)	*100.0*
Risk of falling: letter	-0.3	0.9	4.0	-4.7	14.5
	(3.5)	(1.5)	(1.9)	(3.7)	*100.0*
Consequences: emphasizes loss	-3.3	0.5	4.5	-1.7	7.6
	(3.4)	(1.3)	(1.8)	(3.5)	*100.0*
Consequences: emphasizes gain	-1.9	1.0	2.2	-1.3	44.5
	(3.4)	(1.3)	(1.6)	(3.5)	*100.0*
Risk of falling: underestimation	-4.2	-0.2	2.0	2.4	47.1
	(3.3)	(1.2)	(1.8)	(3.5)	*100.0*
Risk of falling: right perception	-1.9	-0.3	3.4	-1.1	27.8
	(3.5)	(1.1)	(1.7)	(3.5)	*100.0*
Constant	21.2	4.1	7.4	67.3	
	(2.5)	(0.9)	(1.2)	(2.6)	
Global nullity p-value (%)			81.2		
Observations			12,224		

Each column corresponds to the OLS regression of one modality of the perceived needs: *Do you think you will need to make investments in your dwelling?*, on the set of 13 brochure dummies (see equation 6). We aggregate answer items *in one year* and *in two year*, answer items *in five year* and *in ten year* and answer items *later* and *never*. Regressions are implemented including all the variables listed in Table 3 as covariates. For each treatment the last column reports the standard and FDR adjusted p-value (in %) of the test of absence of effect on three of the four modalities of the variable (as they sum to one). The table also presents the p-value of the test of the joint nullity of all coefficients over all 13 treatments.

Robust standard errors are in parentheses

Table 8: Impact of treatments on risk perception and financial barriers

Does your dwelling present potential risks of falling?	Definitely not	Probably not	Yes maybe	Yes definitely	pval *fdr*	Financial barriers	pval *fdr*
Effect of cost treatments (relative to non-informative brochures)							
Present subsidy scheme	-6.7	8.2	-1.2	-0.4	8.0	1.0	42.3
	(3.4)	(3.2)	(2.1)	(1.1)	*11.5*	(1.2)	*46.6*
Add a 15 % extra subsidy	0.3	-1.3	1.5	-0.4	86.9	1.2	30.8
	(3.4)	(3.0)	(2.2)	(1.1)	*67.0*	(1.2)	*37.0*
Add a 35 % extra subsidy	-3.5	2.9	0.7	-0.1	76.7	0.5	66.3
	(3.5)	(3.2)	(2.2)	(1.2)	*62.3*	(1.1)	*56.7*
Free	-3.9	1.8	3.1	-1.0	30.3	0.1	91.8
	(3.4)	(3.0)	(2.2)	(1.0)	*29.4*	(1.0)	*73.6*
Add a 20 % extra subsidy	-10.4	10.4	1.3	-1.3	0.4	1.7	19.4
with a short deadline	(3.4)	(3.2)	(2.1)	(0.9)	*4.8***	(1.3)	*28.5*
Explain the registration process	-5.0	4.2	0.8	-0.0	51.9	2.5	2.3
	(3.4)	(3.1)	(2.0)	(1.2)	*45.2*	(1.1)	*8.2**
Effect of information treatments (relative to non-informative brochures)							
Risk of falling: statistical	-1.0	2.5	-0.7	-0.8	76.2	2.9	1.1
	(3.4)	(3.1)	(2.0)	(1.0)	*62.3*	(1.1)	*7.2**
Risk of falling: testimonial	-9.6	6.4	4.1	-0.9	1.9	5.0	0.0
	(3.5)	(3.2)	(2.3)	(1.0)	*7.6**	(1.2)	*0.1****
Risk of falling: letter	-5.3	2.8	2.7	-0.2	42.3	1.7	11.3
	(3.5)	(3.2)	(2.3)	(1.1)	*39.3*	(1.1)	*17.7*
Consequences: emphasizes loss	-9.0	7.1	1.8	0.0	5.9	2.4	4.8
	(3.4)	(3.1)	(2.1)	(1.2)	*10.0**	(1.2)	*9.9**
Consequences: emphasizes gain	-8.1	7.4	1.5	-0.8	6.0	0.2	87.8
	(3.4)	(3.1)	(2.1)	(1.0)	*10.0**	(1.1)	*73.6*
Risk of falling: underestimation	-8.7	6.1	3.8	-1.1	2.5	0.9	45.4
	(3.4)	(3.2)	(2.3)	(0.9)	*7.6 **	(1.2)	*46.6*
Risk of falling: right perception	-10.5	6.2	4.9	-0.6	0.8	2.8	2.8
	(3.4)	(3.1)	(2.2)	(1.1)	*5.0***	(1.3)	*8.2 **
Constant	44.9	38.3	14.2	2.6		5.3	
	(2.5)	(2.2)	(1.5)	(0.9)		(0.7)	
Constant	44.9	38.3	14.2	2.6		5.3	
	(2.5)	(2.2)	(1.5)	(0.9)		(0.7)	
Global nullity p-value (%)			1.4			0.3	
Observations			13,434			12,756	

Each column corresponds to the OLS regression of one modality of the perceived risk variable: *Does your dwelling present potential risks of falling?* on the set of 13 brochure dummies (see equation 6). See note on table 7

A Imposing a deadline

A.1 Time inconsistency

We model the effect of a conditional subsidy as follows. Consider the issue of choosing when to make an investment and assume a simple case where the cost of investment is c. A loss pl occurs at each period until the investment is made. We assume that time preferences involve a standard discount rate δ, period T is discounted by δ^T for $T > 0$ and the investment date is chosen over a very long time horizon. Under these hypotheses, it can easily be shown that investment will occur in period 0 only if $(1 - \delta) < pl/c$ or will never occur. If time preferences involve the same discount rate δ but also, following Laibson (1997), a preference for present β, period T is discounted by $\beta\delta^T$. In this case, the investment decision changes. It can be shown that investment will occur in period 0, but only if $(1 - \delta\beta) < pl/c$. If $(1-\delta) < pl/c < (1-\delta\beta)$, the investment is planned to occur in period 1, but actually never happens due to time inconsistency.

In this framework, a subsidy conditional on investment in period 0 leading to a cost $c(1-\Delta_c)$ will change the decision in period 0. If $max((1-\delta)(1-\Delta_c), 1-\delta\beta-\Delta_c) < pl/c < (1-\delta\beta)$, retired people will decide to invest, thanks to the subsidy.[30] The same subsidy but without the conditionality would lead additional retired people for whom $(1-\delta\beta)(1-\Delta_c) < pl/c < (1-\delta\beta)$ to invest in period 0. As $(1-\delta\beta-\Delta_c) < (1-\delta\beta)(1-\Delta_c)$, retired people for whom $(1-\delta\beta-\Delta_c) < pl/c < (1-\delta\beta)(1-\Delta_c)$ decide to invest because of the conditionality of the subsidy. Assuming the density of the distribution of pl/c is locally a constant λ, the impact of the additional subsidy is $\lambda\Delta_c(1-\delta\beta)$, and the specific additional impact due to conditionality is $\lambda\delta\beta\Delta_c$ if $\beta < 1-\Delta_c$ and $\lambda\delta(1-\Delta_c)(1-\beta)$ if $\beta > 1-\Delta_c$. The important conclusion is that the additional impact is positive but zero for both $\beta = 0$ and $\beta = 1$. A significant effect can only be detected in the presence of biased time preferences, but no effect can occur for both no bias and large bias.

[30] If $1-\delta\beta-\Delta_c < (1-\delta)(1-\Delta_c)$, i.e. $\beta > 1-\Delta_c$, there is no postponer remaining.

A.2 True and perceived aggregated risk rates

The model we use for Brochures 13 and 14 starts from an equation describing the true risk as a function of available information when correctly processed:

$$p_i^t = p_{i,a}^t + \varepsilon_{i,a} \tag{7}$$

The difference comes from the processing of information, which accounts for possible mistakes:

$$p_{i,a} = p_{i,a}^t + \chi_i \tag{8}$$

χ_i is a mistake component, distributed as $\mathcal{N}(0, \sigma_\chi^2)$.
Treatments provide information on the aggregate true level of risk $P_{B,true}$, and on the aggregate perceived risk $P_{B,perceived}$. We write the associated measurement models as

$$P_{B,true} = P_{i,0} + \varepsilon_{i,B} \tag{9}$$

and the model for the perceived risk as

$$P_{B,perceived} = P_{B,true} + \varepsilon_{i,C} \tag{10}$$

The three conditioning variables $p_{i,a}$, $P_{B,true}$, and $P_{B,true} - P_{B,perceived}$ have a covariance matrix Σ and a covariance vector with p_i^t Λ. The coefficients of equation (4) are therefore simply given by $\Sigma^{-1}\Lambda$. The diagonal elements of Σ are $V_a + V_\chi$, V_B and V_C. The benchmark case corresponds to $P_{B,true}$ only informing $\varepsilon_{i,a}$ and $P_{B,true} - P_{B,perceived}$ only informing χ_i. In such a case, we have

$$\Sigma = \begin{pmatrix} V_a + V_\chi & 0 & Cov_C \\ 0 & V_B & 0 \\ Cov_C & 0 & V_C \end{pmatrix} \quad \text{and} \quad \Lambda = \begin{pmatrix} V_a \\ Cov_B \\ 0 \end{pmatrix}$$

with $V_a = V(\varepsilon_{i,a})$, $V_B = V(\varepsilon_{i,B})$, $V_C = V(\varepsilon_{i,C})$, $Cov_B = cov(\varepsilon_{i,a}, \varepsilon_{i,B}) > 0$ and $Cov_C = cov(\chi_i, \varepsilon_{i,C}) > 0$

As a result, we obtain for the coefficients of equation (4):

$$\beta = \frac{(V_a + V_\chi)V_C}{(V_a + V_\chi)V_C - Cov_C^2},\ \lambda = \frac{Cov_B}{V_B},\ \text{and}\ \mu = \frac{(V_a + V_\chi)Cov_C}{(V_a + V_\chi)V_C - Cov_C^2}$$

and we have, as expected, a positive coefficient.

Notice that in another polar case, there might be no "mistake" component: $V_\chi = 0$ and both $P_{B,true}$ and $P_{B,perceived}$ are independent conditional on prior information, and both bring some knowledge on the unknown component $\varepsilon_{i,a}$: $Cov(\varepsilon_{i,a}, P_{B,Perceived} = Cov_{B,p}) > 0$ and $Cov(\varepsilon_{i,a}, P_{B,True}) = Cov_{B,t} > 0$. Derivation of the parameters of equation 4 would be in such a case:

$$\beta = 1,\ \lambda = \frac{Cov_{B,t}}{V_{B,t}} + \frac{Cov_{B,p}}{V_{B,p}},\ \text{and}\ \mu = -\frac{Cov_{B,p}}{V_{B,p}}$$

In such a case, the coefficient μ would be negative.

Also notice that in such a case, the brochure providing aggregated and perceived risk a s both high and equal achieves an impact of $(\frac{Cov_{B,t}}{V_{B,t}} + \frac{Cov_{B,p}}{V_{B,p}}) \times (P_{B,true} - P_0)$, while Brochure 8 would lead to a smaller increase of just $\frac{Cov_{B,t}}{V_{B,t}} \times (P_{B,true} - P_0)$, therefore smaller.

B Survey

The survey was implemented when brochures were sent for the second time. Table B1 provides information on samples concerned by the survey and the corresponding response rates. The table provides response rate computations, either accounting or not for the very small fraction of retired people who were no longer living at the address we used. The survey was first sent by mail to the whole population that received a brochure (including the non-informative brochure). Among the 40,670 retired people still living at the address we used,

13,499 answered. This represents a response rate around 33%. We then randomly assigned non-respondents to a group to be reached by phone and to pass directly the questionnaire on the phone upon agreement. We sampled 4075 retired people, which makes a sampling rate around 15%. Of these sampled retired people, 1031 agreed to answer the phone survey, corresponding to a response rate of approximately 25%. As a whole, when we account for these two steps, the response rate can be computed as approximately 50%.

There are two additional issues we would like to discuss. First, does restricting analysis to respondents change the main results for the take-up variable? Second, is the response rate related to the content of brochures?

To answer the first question, we consider our main outcome variable (registration into the PAP program) and just run the OLS regression of the main equation 6 on two different samples. The first one is the 40,970 sample of retired people for whom the initial brochure sent was not returned. The second is the 14,530 sample of survey respondents (those who agreed to respond). In this case, we use the weights associated to the sampling procedure (see footnote 15).

To answer the second question, we focus on partial responses for the two main questions we use in the questionnaire. There is a global non-response to the questionnaire, but there is also partial non-response, as some retired people sent the questionnaire back without answering the whole set of questions. Of the three main questions in the survey, one is related to plans for safety investments in the future; another is related to risk perception; and a last one is related to financial barrier. More precisely, the question about planned demand is: *Do you think you will need to make investments in your dwelling?*; and the question about risk perception is: *Does your dwelling present potential risks of falling?*. As for the question about financial barrier, retired people are first asked if they called the number indicated in the brochure. In case they answer that they did not call, a further question asks whether they intended to call. In case they did not call or did not intend to call, retired people are asked if this was because they feared financial consequences. It is this last question that we

use. It should be missing for retired people who called or intended to call. However, that was not the case at all. Looking at the response behavior of these several variables shows that actually retired people did not follow the conditionality. They answered the question even if they were not supposed to. Moreover, they sometimes answered the question when they did not answer any of the two previous questions. Table B3 provides some evidence here: it presents crossed counts of the of retired people who declared they did not call the phone number on the brochure but intended to, as well as those who said or not they did not call because they feared financial consequences.

In order to analyze response rates, we consider the sample of people who either answered the paper survey or were sampled to be reached on the phone, and we run the following regression:

$$r_q = a + \sum_{k=2}^{14} b_k \times 1(\text{Receive brochure } k) + u \tag{11}$$

where r_q is the response to the considered question. We estimate these equations on the sample of people who responded to the global questionnaire with a weight of 1 and to the sample of non-respondents sampled to be directly reached by the phone survey, with a weight corresponding to the inverse of the sampling rate (see footnote 15).

Table B2 presents results for these two questions. There are global and also partial non-responses: all of the sample does not answer the two questions. Columns (1), (2), and (3) explain responses to the three selected questions as a function of brochures, while Columns (4) and (5) present results of demand sensitivity when restricting sample to respondents [Column (4)] and to the sample receiving the brochures [Column (5)]. For this column, we also restrict the sample to individuals for whom postal questionnaires were not returned by the post office. As shown in the table, using the brochure sample makes little difference when compared to the whole sample used in Table 5. Using the selected sample of respondents does not change the picture as far as the impact of brochures, even if there are some slight differences. Brochures impacting demand are the "100% subsidy" brochure and the brochures

about "right perception" and "gain." One notable difference, however, is for the "statistical" brochure about risk, which has no effect on the sample of survey respondents. When we turn to response rates to each of our three questions of interest, we see that treatments do not have an impact on response behavior. There is a notable exception, however: the "100% subsidy" brochure is over-represented with a large and significant coefficient. We do not observe any other significant difference for the other brochures. Although we accept the joint nullity of all coefficients, this large difference in response rate for people receiving the 100% subsidy brochure casts serious doubts about any effect regarding the impact of this brochure when using our survey data.

Table B1: Paper and Phone Survey

	Whole	Paper Survey		Sampling		Phone Survey		Global
		Respondents	Rate	Sampled	Rate	Respondents	Rate	Rate
	(1)	(2)	(3) $\frac{(2)}{(1)}$	(4)	(5) $\frac{(4)}{(1)-(2)}$	(6)	(7) $\frac{(6)}{(4)}$	(8) $\frac{(2)+(6)/(5)}{(1)}$
All Brochure Groups	42079	13554	32.2	4439	15.6	1136	25.6	49.6
of which Non Returned Mails	40670	13499	33.2	4075	15.0	1031	25.3	50.1

The table presents response rates and sampling rates for the mail and phone surveys. Column (1) gives the size of the sample; columns (2) and (3) the number of respondents to the mail survey and the corresponding response rate. Columns (4) and (5) give the number of non-respondents surveyed for the phone survey and the corresponding sampling rate. Columns (6) and (7) show the number of respondents to the phone survey and the corresponding response rate. Column (8) gives the global response rate.

Table B2: Respondents to Survey

	(1)	(2)	(3)	(4)	(5)
	Partial response to question about			Demand	
	needs	risk	financial barrier	Survey	Sample
Effect of cost brochures (relative to non-informative brochures)					
Present subsidy scheme	0.84	0.20	0.70	-0.07	0.35
	(2.67)	(2.74)	(2.36)	(0.37)	(0.23)
Add a 15 % extra subsidy	3.59	3.51	3.53	1.26*	0.34
	(2.70)	(2.77)	(2.42)	(0.70)	(0.23)
Add a 35 % extra subsidy	-0.22	0.34	-1.34	0.86	0.36
	(2.64)	(2.73)	(2.32)	(0.59)	(0.23)
Free	7.36***	7.15**	5.31**	1.19**	0.77***
	(2.77)	(2.84)	(2.47)	(0.59)	(0.26)
Add a 20 % extra subsidy	0.85	1.57	1.44	1.02	0.52**
with a short deadline	(2.70)	(2.78)	(2.39)	(0.63)	(0.24)
Explain the registration process	2.73	3.11	4.16*	0.16	0.49**
	(2.74)	(2.82)	(2.47)	(0.38)	(0.24)
Effect of information brochures (relative to non-informative brochures)					
Risk of falling: statistical	2.50	2.93	1.97	0.57	0.67***
	(2.68)	(2.76)	(2.38)	(0.40)	(0.25)
Risk of falling: testimonial	0.34	0.09	-1.00	0.55	0.00
	(2.67)	(2.75)	(2.34)	(0.60)	(0.20)
Risk of falling: letter	-1.36	0.10	0.24	-0.15	0.22
	(2.63)	(2.73)	(2.36)	(0.36)	(0.22)
Consequences: emphasizes loss	-0.29	1.28	2.95	0.05	0.20
	(2.66)	(2.77)	(2.42)	(0.38)	(0.22)
Consequences: emphasizes gain	3.00	1.74	3.73	1.15	0.66***
	(2.71)	(2.77)	(2.44)	(0.74)	(0.25)
Risk of falling: underestimation	0.90	0.62	1.93	-0.10	0.20
	(2.69)	(2.77)	(2.43)	(0.35)	(0.22)
Risk of falling: right perception	0.26	0.51	2.73	1.84**	0.85***
	(2.65)	(2.73)	(2.39)	(0.78)	(0.26)
Constant	41.63***	45.13***	34.78***	1.07***	0.92***
	(1.90)	(1.95)	(1.69)	(0.26)	(0.10)
Control Variables	Yes	Yes	Yes	Yes	Yes
Observations	17,570	17,570	17,570	14,526	48,090
All Flyer (%)	20.58	47.41	15.81	3.918	0.725

Columns (1) to (3) provide the results of the OLS estimation of equation 11 on the following partial response variables:

(1) *Do you think you will need to make investments in your dwelling?*

(2) *Why didn't you call the CNAV after receiving the brochure? Was it because you feared financial consequences?*

(3) *Does your dwelling present potential risks of falling?*

Columns (4) and (5) consider the main outcome variable (registration into the PAP program) and present the results of the OLS estimation of equation 6 on the sample of respondents to the survey and on the whole sample of retired people for whom the brochures were not sent back to CNAV because the person was no longer living at the address. Columns (1) to (4) use survey sampling weights.

Table B3: Call and the Financial barrier variable

	No financial barrier	financial barrier	missing	Total
No call	11630	1018	743	13391
Called	84	16	213	313
missing	289	43	2753	3085
Total	12003	1077	3709	16789

Joint distribution among survey respondents of the aggregated variable "call the phone number on brochure" and the financial barrier variable. The financial barrier variable is supposed to be answered only by survey respondents who did not call.

Table B4: Perceived barrier in the short-run

	(1)	(2)	(3)	(4)
Effect of cost brochures (relative to non-informative brochures)				
Present subsidy scheme	0.5	1.0	-2.5	1.3
	(2.5)	(1.2)	(2.7)	(1.2)
Add a 15 % extra subsidy	-1.0	1.2	-3.2	1.6
	(2.3)	(1.2)	(2.7)	(1.2)
Add a 35 % extra subsidy	-2.3	0.5	-0.4	1.5
	(2.1)	(1.1)	(2.5)	(1.3)
Free	-2.5	0.1	2.3	0.1
	(2.1)	(1.0)	(2.4)	(1.2)
Add a 20 % extra subsidy with a short deadline	-2.2	1.7	-0.2	2.0
	(2.1)	(1.3)	(2.4)	(1.3)
Explain the registration process	-1.2	2.5**	-2.1	-0.2
	(2.2)	(1.1)	(2.6)	(1.2)
Effect of information brochures (relative to non-informative brochures)				
Risk of falling: statistical	-1.7	2.9**	0.3	0.5
	(2.2)	(1.1)	(2.5)	(1.2)
Risk of falling: testimonial	0.2	5.0***	-4.7*	2.0
	(2.3)	(1.2)	(2.6)	(1.3)
Risk of falling: letter	-2.8	1.7	-1.3	1.4
	(2.1)	(1.1)	(2.5)	(1.3)
Consequences: emphasizes loss	0.1	2.4**	0.7	-0.1
	(2.2)	(1.2)	(2.4)	(1.2)
Consequences: emphasizes gain	-6.3***	0.2	4.1*	0.6
	(1.9)	(1.1)	(2.2)	(1.2)
Risk of falling: underestimation	2.0	0.9	-4.4	0.5
	(2.6)	(1.2)	(2.8)	(1.2)
Risk of falling: right perception	-1.0	2.8**	0.3	0.5
	(2.3)	(1.3)	(2.5)	(1.2)
Constant	11.9***	5.3***	80.3***	7.3***
	(1.7)	(0.7)	(1.9)	(0.8)
Observations	12,543	12,543	12,543	12,543
Control Variables	Yes	Yes	Yes	Yes
All Flyer (%)	0.000275	0.284	0.358	71.76

Variables correspond to reasons for not calling. They are coded as 0 if retired people say they called or intended to call.

(1) Lack of time or forgetfulness or fear of process;

(2) Fear of financial consequences;

(3) Not useful, useful but no need, no longer need;

(4) other

C Brochure Appendix

Figure C1: Informative pages of Brochure 4 and 7

Brochure 4: 35 % additional subsidy

Assistance in adapting housing

Pensioner's Insurance can finance a part of the cost linked to adapting your home. Exceptionally, Pensioner's Insurance proposes extra financial assistance amounting to 35%.

How can I take advantage of financial assistance?

Call **09 71 10 75 10** to receive the financial assistance file. If your file meets qualifications[1], an assessor will make an appointment to visit your home. He will make a list of needs and will draw up a personalised action plan.
Pensioner's Insurance can finance a part of the cost linked to adapting your home.

How much will this be?

Scale of financial assistance (of the diagnostic and technical assistance) according to monthly revenue[2]

One person	Couple	Financial assistance scale
Up to €790	Up to €1,374	90%
Up to €847	Up to €1,467	86%
Up to € 956	Up to €1,606	79%
Up to €1,122	Up to €1,804	73%
Up to €1,173	Up to €1,872	64%
Up to €1,309	Up to €1,999	49%
Up to €1,497	Up to €2,246	35%
Over €1,497	Over € 2,246	27%

+35%

Example

Mrs Martin has a revenue of €1,200 and wants to install two support bars for a total of €200. Thanks to financial assistance of 49% and the extra 35%, she will only have to pay €32.

Brochure 7: Registration process

Living well at home is not as complicated as it may seem!

Pensioner's Insurance can finance a part of the cost linked to adapting your home.

How can I take advantage of financial assistance?

Just call Pensioner's Insurance at **09 71 10 75 10** to receive a file.

You fill out the file and return it.

If your file meets qualifications[1], an assessor will make an appointment to visit your home.

He will identify your needs and propose solutions adapted to your home.

Depending on your resources, Pensioner's Insurance will pay for a part of these expenses.

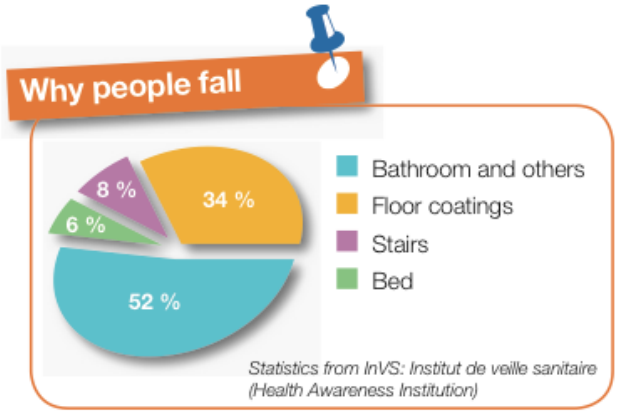
Your accommodations are now better adapted to your needs.

Figure C2: informative pages of Brochure 8 and 9

Brochure 8: Statistical information on risk of falling

Adapting accommodations to reduce risks

A third of those aged 65 or mall fall at least once per year and half of them then fall again frequently. In 30 to 50% of these cases, they fell because of the way their house was planned.



Consequences

10% of falls lead to complications, in particular fractures. There can also be psychological after effects: one quarter of those who had fallen once are afraid of falling again and are afraid to leave their homes.

Plan your house to reduce risks

Often just a few changes in your home can help you avoid falling. A scientific study has proved that the risk of falling decreases by at least 30% thanks to simple actions such as installing a support bar in a bathroom.

Brochure 8: Testimony on risk of falling

"When you fall, at my age, it's no longer funny"

Christian Bourbon, who has retired, tells us about the reasons why she contacted Pensioner's Insurance.

"Until very recently, I didn't think it was necessary for me to modify anything in my bathroom.

But just a few weeks ago I slipped and luckily I was able to prevent myself from falling by grabbing the vanity nearby. I became aware that my environment, even though I am used to it, could present a danger for me. I could have had a very serious accident.

I then contacted Pensioner's Insurance and they were able to propose several different solutions to my problems. In particular, we decided that a bit of planning was going to be necessary.

Since then, I installed a support bar to help me. And I must say that it really is useful. I can move around more freely and now I'm not afraid of falling anymore."

Figure C3: The two informative pages of Brochure 13 and14

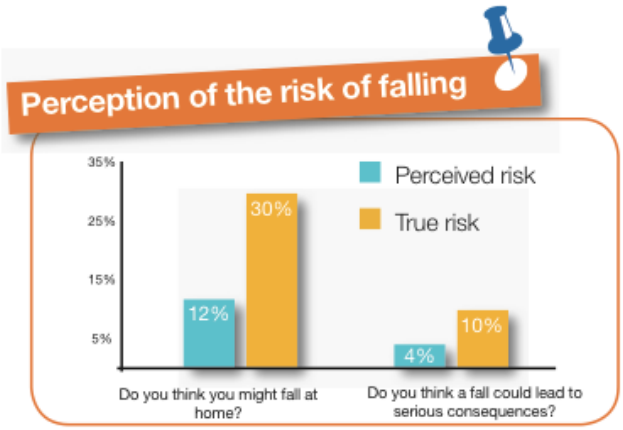
Brochure 13: Underestimation of risk

Never underestimate the risk of falling

A third of those aged 65 or over fall at least once per year and half of them then fall again frequently.
10% of falls lead to complications, in particular fractures. There can also be psychological after effects: one quarter of those who had fallen once are afraid of falling again and become afraid of leaving their homes.

Risks are underestimated

Many pensioners believe that falling down is not serious. Only 12% believe that they present a high risk of falling and 4% that falling can lead to serious consequences.



Do you think you are at risk of falling?

If this is the case, just a few changes in your home can help you avoid falling. By simple things such as installing a support bar, it is easy to reduce the risk of falling. Pensioner's Insurance can finance a part of the cost linked to adapting your home.

Brochure 14: Right estimation of risk

Correctly measuring the risk of falling

A third of those aged 65 or more fall at least once per year and half of them then fall again frequently. 10% of falls lead to complications, in particular fractures. There can also be psychological after effects: one quarter of those who had fallen once are afraid of falling again and become afraid to leave their homes.

Correctly evaluated risks

Pensioners evaluate correctly the risk of falling that directly depends on the way their homes are equipped.

Do you think you are at risk of falling?

If this is the case, just a few changes in your home can help you avoid falling. By simple things such as installing a support bar, it is easy to reduce the risk of falling. Pensioner's Insurance can finance a part of the cost linked to adapting your home

D Internet Brochure Appendix

Figure D1: Recto and Verso of Brochure 1 (control)

Social actions from Pensioner's Insurance

Pensioner's insurance does not just manage careers and pay out pensions. It also works in the field of social action to accompany pensioners.
Its missions comprise two dimensions:

The objective evaluation of the needs of a pensioner

During an appointment at the home of a pensioner, a professional carrying out a mission by Pensioner's Insurance will evaluate this need and give advice and recommendations. If needed, he will be able to recommend services that will assist the pensioner in remaining at his home.

A whole range of services dedicated to "aging well"

Pensioner's Insurance proposes a complete range of services for pensioners, covering the most important dimensions of personal well-being, social life, upkeep and adaptation of accommodations.

Did you know?

Pensioner's Insurance help you pay for many types of assistance such as the installation of seat or bed risers and support bars, remote assistance, meals brought to your home, refurbishing your home, delivering food, assistance in cleaning your house, someone to go with you on your trips and prevention workshops.

Sécurité sociale – l'Assurance Retraite

09 71 10 75 10
From Monday to Friday from 9:00 to 12:00 and from 13:00 to 17:00, our advisers will be happy to answer any questions you may have

You may be eligible for all Ile-de-France Pension Insurance social action services:
- if you do not receive the APA, PSD, ACTP, PCH or the MTP;
- if you are not staying in a retirement home or another establishment.

Réf. 01 - février 2011 – Conception : Citizen Press - Réalisation : ••• Oblo - Crédit photos : Fotolia. Ce document n'est pas contractuel.

Pensioners

Enjoying your daily life, services to help you

Sécurité sociale – l'Assurance Retraite

Figure D2: The two first pages of Brochure2 (subsidy)

Figure D2: The two last pages of Brochure2 (subsidy)

Social actions from Pensioner's Insurance

Pensioner's insurance does not just manage careers and pay out pensions. It also works in the field of social action to accompany pensioners.

Its missions comprise two dimensions:

The objective evaluation of the needs of a pensioner

During an appointment at the home of a pensioner, a professional carrying out a mission by Pensioner's Insurance will evaluate this need and give advice and recommendations. If needed, he will be able to recommend services that will assist the pensioner in remaining at his home.

A whole range of services dedicated to "aging well"

Pensioner's Insurance proposes a complete range of services for pensioners, covering the most important dimensions of personal well-being, social life, upkeep and adaptation of accommodations.

Did you know ?

Pensioner's Insurance helps you pay for many types of assistance such as the installation of seat or bed risers and support bars, remote assistance, meals brought to your home, refurbishing your home, delivering food, assistance in cleaning your house, someone to go with you on your trips and prevention workshops.

1: If your file is not accepted, you will receive a letter saying that you do not qualify.

Assistance in adapting accommodations

Pensioner's Insurance can finance a part of the cost linked to adapting your home

How can I take advantage of financial assistance?

Call **09 71 10 75 10** to receive the financial assistance file. If your file meets qualifications[1], an assessor will make an appointment to visit your home. He will make a list of needs and will draw up a personalised action plan.
Pensioner's Insurance can finance a part of the cost linked to adapting your home.

How much will this be?

Scale of financial assistance (of the diagnostic and technical assistance) according to monthly revenue[1]

One person	Couple	Financial assistance scale
Up to €790	Up to €1,374€	90%
Up to €847	Up to €1,467€	86%
Up to €956	Up to €1,606€	79%
Up to €1,122	Up to €1,804€	73%
Up to €1,173	Up to €1,872€	64%
Up to €1,309	Up to €1,999€	49%
Up to €1,497	Up to €2,246	35%
Over €1,497	Over €2,246	27%

Example

Mrs Martin has a revenue of €1,200 and wants to install two support bars for a total of €200. Thanks to financial assistance of 49% and the extra 20%, she will only have to pay €102.

Figure D3: The two informative pages of Brochure3 (15 % additional subsidy)

Pensioners

Adapt your home for a better life

SÉCURITÉ SOCIALE
L'Assurance Retraite

Assistance in adapting housing

Pensioner's Insurance can finance a part of the cost linked to adapting your home. Exceptionally, Pensioner's Insurance proposes extra financial assistance amounting to 15%.

How can I take advantage of financial assistance?

Call **09 71 10 75 10** to receive the financial assistance file. If your file meets qualifications[1], an assessor will make an appointment to visit your home. He will make a list of needs and will draw up a personalised action plan.
Pensioner's Insurance can finance a part of the cost linked to adapting your home.

How much will this be?

Scale of financial assistance (of the diagnostic and technical assistance) according to monthly revenue[2]

One person	Couple	Financial assistance scale
Up to €790	Up to €1,374	90%
Up to €847	Up to €1,467	86%
Up to € 956	Up to €1,606	79%
Up to €1,122	Up to €1,804	73%
Up to €1,173	Up to €1,872	64%
Up to €1,309	Up to €1,999	49%
Up to €1,497	Up to €2,246	35%
Over €1,497	Over € 2,246	27%

+15%

Example

Mrs Martin has a revenue of €1,200 and wants to install two support bars for a total of €200. Thanks to financial assistance of 49% and the extra 15%, she will only have to pay €72.

Figure D4: The two informative pages of Brochure 4 (35 % additional subsidy)

Pensioners

Adapt your home for a better life

SÉCURITÉ SOCIALE
l'Assurance Retraite

Assistance in adapting housing

Pensioner's Insurance can finance a part of the cost linked to adapting your home. Exceptionally, Pensioner's Insurance proposes extra financial assistance amounting to 35%.

How can I take advantage of financial assistance?

Call **09 71 10 75 10** to receive the financial assistance file. If your file meets qualifications[1], an assessor will make an appointment to visit your home. He will make a list of needs and will draw up a personalised action plan.
Pensioner's Insurance can finance a part of the cost linked to adapting your home.

How much will this be?

Scale of financial assistance (of the diagnostic and technical assistance) according to monthly revenue[2]

One person	Couple	Financial assistance scale
Up to €790	Up to €1,374	90%
Up to €847	Up to €1,467	86%
Up to € 956	Up to €1,606	79%
Up to €1,122	Up to €1,804	73%
Up to €1,173	Up to €1,872	64%
Up to €1,309	Up to €1,999	49%
Up to €1,497	Up to €2,246	35%
Over €1,497	Over € 2,246	27%

+35%

Example

Mrs Martin has a revenue of €1,200 and wants to install two support bars for a total of €200. Thanks to financial assistance of 49% and the extra 35%, she will only have to pay €32.

Figure D5: The two informative pages of Brochure 5(100 % additional subsidy)

Pensioners

Adapt your home for a better life

SÉCURITÉ SOCIALE
L'Assurance Retraite

Assistance in adapting housing

Exceptionally, Pensioner's Insurance can **finance all costs** linked to adapting your home.

How can I take advantage of financial assistance?

Call **09 71 10 75 10** to receive the financial assistance file. If your file meets qualifications[1], an assessor will make an appointment to visit your home. He will make a list of needs and will draw up a personalised action plan. Pensioner's Insurance, if you meet the conditions, will finance all costs linked to adapting your home (diagnostics and technical assistance).

Example

Mrs Martin wants to install two support bars for a total of €200 which will be completely financed by Pensioner's Insurance.

100 % of expenses paid

Figure D6: The two informative pages of Brochure 6 (20 % additional subsidy conditional on comittment)

Pensioners

Acting now helps you appreciate tomorrow

SÉCURITÉ SOCIALE
L'Assurance Retraite

Acting now helps you appreciate tomorrow

Though falling may have serious consequences, there are simple solutions to help prevent this. People always say they have plenty of time, and put off adapting their accommodations or participating in preventive actions. Pensioner's Insurance can finance a part of the cost linked to adapting your home.

How can I take advantage of financial assistance?

Pick up your financial assistance form by calling **09 71 10 75 10**. You will then be mailed a form to fill out and return to us. If your file meets qualifications[1], an assessor will make an appointment to visit your home. He will make a list of needs and will draw up a personalised action plan.
You will have an extra 20 % if you contact Pensioner's Insurance within 15 days after reception of the leaflet.

How much will this be?

Scale of financial assistance (of the diagnostic and technical assistance) according to monthly revenue[2]

One person	Couple	Financial assistance scale
Up to €790	Up to €1,374	90%
Up to €847	Up to €1,467	86%
Up to €956	Up to €1,606	79%
Up to €1,122	Up to €1,804	73%
Up to €1,173	Up to €1,872	64%
Up to €1,309	Up to €1,999	49%
Up to €1,497	Up to €2,246	35%
Over €1,497	Over €2,246	27%

+20%

Example
Mrs Martin has a revenue of €1,200 and wants to install two support bars for a total of €200. Thanks to financial assistance of 49% and the extra 20%, she will only have to pay €62.

Figure D7: The two informative pages of Brochure 7 (Non monetary cost)

Pensioners

Living well at home, is not as complicated as it may seem!

SÉCURITÉ SOCIALE
l'Assurance Retraite

Living well at home is not as complicated as it may seem!

Pensioner's Insurance can finance a part of the cost linked to adapting your home.

How can I take advantage of financial assistance?

Just call Pensioner's Insurance at **09 71 10 75 10** to receive a file.

You fill out the file and return it.

If your file meets qualifications[1], an assessor will make an appointment to visit your home.

He will identify your needs and propose solutions adapted to your home.

Depending on your resources, Pensioner's Insurance will pay for a part of these expenses.

Your accommodations are now better adapted to your needs.

Figure D8: The two informative pages of Brochure 8 (Statistical information on risk of falling)

Pensioners

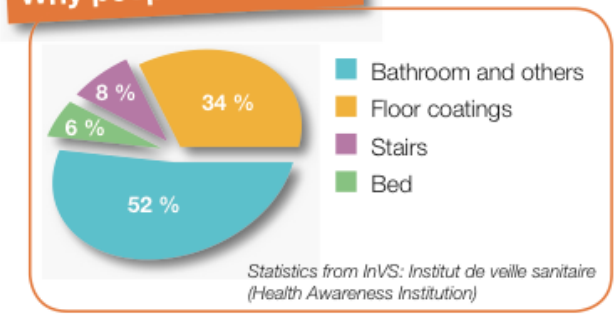
Adapt your house to reduce risks

SÉCURITÉ SOCIALE
l'Assurance Retraite

Adapting accommodations to reduce risks

A third of those aged 65 or mall fall at least once per year and half of them then fall again frequently. In 30 to 50% of these cases, they fell because of the way their house was planned.

Why people fall



Statistics from InVS: Institut de veille sanitaire (Health Awareness Institution)

Consequences

10% of falls lead to complications, in particular fractures. There can also be psychological after effects: one quarter of those who had fallen once are afraid of falling again and are afraid to leave their homes.

Plan your house to reduce risks

Often just a few changes in your home can help you avoid falling. A scientific study has proved that the risk of falling decreases by at least 30% thanks to simple actions such as installing a support bar in a bathroom.

Figure D9: The two informative pages of Brochure 9 (Testimony on risk of falling)

Pensioners

«When you fall, at my age, it's no longer funny »

SÉCURITÉ SOCIALE
l'Assurance Retraite

"When you fall, at my age, it's no longer funny"

Christian Bourbon, who has retired, tells us about the reasons why she contacted Pensioner's Insurance.

"Until very recently, I didn't think it was necessary for me to modify anything in my bathroom.

But just a few weeks ago I slipped and luckily I was able to prevent myself from falling by grabbing the vanity nearby. I became aware that my environment, even though I am used to it, could present a danger for me. I could have had a very serious accident.

I then contacted Pensioner's Insurance and they were able to propose several different solutions to my problems. In particular, we decided that a bit of planning was going to be necessary.

Since then, I installed a support bar to help me. And I must say that it really is useful. I can move around more freely and now I'm not afraid of falling anymore."

Figure D10: Brochure 10 (Letter)

Dear Sir and Madam,

A poorly adjusted carpet, shelves that are too high, moss on your steps, a slippery bathtub: as you get older, moving around in poorly adapted accommodations can truly be risky. One moment of inattention and you could easily slip. And consequences of this could be heavy.

Ile-de-France Pension Insurance is sending you this letter today to present you its personalised action plans. Recently implemented, they consist of studying with you any eventual needs to improve your accommodations and enhance your daily comfort.

Take a few minutes to ask yourself the right questions:

Are my accommodations still adapted to my physical condition? The risk of falling is easier to prevent than to cure. Take a look around you: do you need a support bar in your shower; have the stairs become too dangerous?

Do my accommodations present potential risks of falling? People fall because of many different reasons. The floor coating, different levels, kitchen and bathroom appliances, windows, lighting, stairs, balconies and patios must be checked for potential risks.

Would it be a good idea to refurbish my accommodations? Moving around easily and a safe access to all rooms in your home play an important role in your autonomy, the quality of your life and your happiness.

If you think that your accommodations should be better adapted, please contact the following phone number: **01 55 45 79 79 from Monday to Friday from 9:00 to 12:00 and from 13:00 to 17:00; our advisers will be happy to answer any questions you may have.**
Ile-de-France Pension Insurance has put in place solutions to make your approach easier and help finance the rehabilitation of your accommodations.

Ile-de-France Social Action Management

Figure D11: The two informative pages of Brochure 11 (Emphasizing falls as the reference point)

Pensioners

Poorly adapted housing increases the risk of falling

SÉCURITÉ SOCIALE
l'Assurance Retraite

Poorly adapted housing increases the risk of falling

When people grow older, living in poorly adapted housing can be dangerous. This is often just a question of small, but very important details: a rug that is not in the right place, a poorly adapted bathroom, a bed that is too high or slippery wooden floors.
There are many obstacles to which people do not pay attention but which can cause them to fall.

Consequences must be well understood

Even if there is no immediate trauma, falling can lead to a loss of autonomy. Not being able to get up again by yourself is a bad sign which can have an important aftermath on your health.

Having to stay in hospital for some time, eventually having to move house because you can no longer access your accommodations, investing in material adapted to your new condition as an invalid...these situations are certainly ones to be avoided.

Figure D12: The two informative pages of Brochure 12 (Emphasizing not falling as the reference point)

Pensioners

Adapting your accommodations means you can continue safely living in your own home

SÉCURITÉ SOCIALE
l'Assurance Retraite

Adapting your accommodations means continuing to safely live at home.

As people get older, a poorly adapted environment can be very dangerous. However, often all that is needed to maintain autonomy and safety at home is just a few simple adjustments. A support bar in the bathroom or toilets, a lower bed, a better adjusted floor: these few details can make your daily life safer and much more comfortable.

New fittings make a difference

The best way to avoid complications linked to falling is to anticipate them. Preventing them, rather than curing them. Putting in place measures aimed at adapting your home is a part of the good reactions that help you remain autonomous and continue to live safely at home.

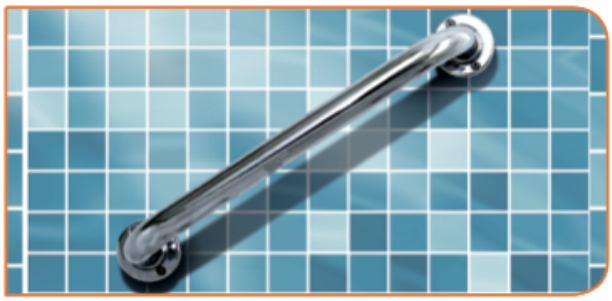


Figure D13: The two informative pages of Brochure 13 (Underestimation of risk)

Pensioners

underestimate the risk of falling

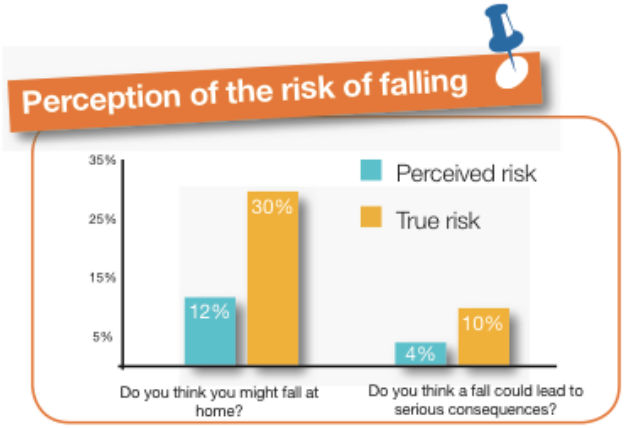
SÉCURITÉ SOCIALE
l'Assurance Retraite

Never underestimate the risk of falling

A third of those aged 65 or over fall at least once per year and half of them then fall again frequently.
10% of falls lead to complications, in particular fractures. There can also be psychological after effects: one quarter of those who had fallen once are afraid of falling again and become afraid of leaving their homes.

Risks are underestimated

Many pensioners believe that falling down is not serious. Only 12% believe that they present a high risk of falling and 4% that falling can lead to serious consequences.



Do you think you are at risk of falling?

If this is the case, just a few changes in your home can help you avoid falling. By simple things such as installing a support bar, it is easy to reduce the risk of falling. Pensioner's Insurance can finance a part of the cost linked to adapting your home.

Figure D14: The two informative pages of Brochure 14 (Right estimation of risk)

Pensioners

The risk of falling: a reality to be aware of

SÉCURITÉ SOCIALE
l'Assurance Retraite

Correctly measuring the risk of falling

A third of those aged 65 or more fall at least once per year and half of them then fall again frequently. 10% of falls lead to complications, in particular fractures. There can also be psychological after effects: one quarter of those who had fallen once are afraid of falling again and become afraid to leave their homes.

Correctly evaluated risks

Pensioners evaluate correctly the risk of falling that directly depends on the way their homes are equipped.

Perception of the risk of falling

Do you think you are at risk of falling?

If this is the case, just a few changes in your home can help you avoid falling. By simple things such as installing a support bar, it is easy to reduce the risk of falling. Pensioner's Insurance can finance a part of the cost linked to adapting your home

References

Anderson, M. L. (2012): "Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects," Journal of the American statistical Association.

Ashraf, N., J. Berry, and J. M. Shapiro (2010): "Can Higher Prices Stimulate Product Use? Evidence from a Field Experiment in Zambia," American Economic Review, 100, 2383–2413.

Ashraf, N., E. Field, and J. Lee (2014): "Household bargaining and excess fertility: An experimental study in Zambia." American Economic Review, 104, 2210–2237.

Banerjee, A., S. Barnhardt, and E. Duflo (2015): "Movies, Margins, and Marketing: Encouraging the Adoption of Iron-Fortified Salt," in Insights in the Economics of Aging, University of Chicago Press.

Banerjee, A. V., E. Duflo, R. Glennerster, D. Kothari, et al. (2010): "Improving immunisation coverage in rural India: clustered randomised controlled evaluation of immunisation campaigns with and without incentives," Bmj, 340.

Benjamini, Y. and Y. Hochberg (1995): "Controlling the false discovery rate: a practical and powerful approach to multiple testing," Journal of the royal statistical society. Series B (Methodological), 289–300.

Benjamini, Y., A. M. Krieger, and D. Yekutieli (2006): "Adaptive linear step-up procedures that control the false discovery rate," Biometrika, 93, 491–507.

Bertrand, M., D. Karlan, S. Mullainathan, E. Shafir, and J. Zinman (2010): "What's Advertising Content Worth? Evidence from a Consumer Credit Marketing Field Experiment," Quarterly Journal of Economics, 125, 263–305.

Cawley, J. and J. A. Price (2013): "A case study of a workplace wellness program that offers financial incentives for weight loss," Journal of health economics, 32, 794–803.

Charness, G. and U. Gneezy (2009): "Incentives to exercise," Econometrica, 77, 909–931.

Cohen, J. and P. Dupas (2010): "Free Distribution or Cost-Sharing? Evidence from a Randomized Malaria Prevention Experiment," Quarterly Journal of Economics, 125, 1–45.

Cohen, J., P. Dupas, and S. Schaner (2015): "Price Subsidies, Diagnostic Tests, and Targeting of Malaria Treatment: Evidence from a Randomized Controlled Trial," American Economic Review, 105, 609–45.

Downs, J., G. Loewenstein, and J. Wisdom (2009): "Strategies for promoting healthier food choices," American Economic Review, 99, 159–64.

Dupas, P. (2011): "Do Teenagers Respond to HIV Risk Information? Evidence from a Field Experiment in Kenya," American Economic Journal: Applied Economics, 3, 1–34.

Dupas, P., V. Hoffmann, M. Kremer, and A. P. Zwane (2016): "Targeting health subsidies through a nonprice mechanism: A randomized controlled trial in Kenya," Science, 353, 889–895.

Dupas, P. and E. Miguel (2016): "Impacts and determinants of health levels in low-income countries," Handbook of Economic Field Experiments.

Finkelstein, E. A., L. A. Linnan, D. F. Tate, and B. E. Birken (2007): "A pilot study testing the effect of different levels of financial incentives on weight loss among overweight employees," Journal of Occupational and Environmental Medicine, 49, 981–989.

Gine, X., D. Karlan, and J. Zinman (2010): "Put Your Money Where Your Butt Is: A Commitment Contract for Smoking Cessation," American Economic Journal: Applied Economics, 2, 213–35.

Jalan, J. and E. Somanathan (2008): "The importance of being informed: Experimental evidence on demand for environmental quality," Journal of Development Economics, 87, 14–28.

John, L. K., G. Loewenstein, A. B. Troxel, L. Norton, J. E. Fassbender, and K. G. Volpp (2011): "Financial incentives for extended weight loss: a randomized, controlled trial," Journal of general internal medicine, 26, 621–626.

Just, D. R. and J. Price (2013): "Using incentives to encourage healthy eating in children," Journal of Human Resources, 48, 855–872.

Kannus, P., H. Sievänen, M. Palvanen, T. Järvinen, and J. Parkkari (2005): "Prevention of falls and consequent injuries in elderly people," The Lancet, 366, 1885–1893.

Kling, J. R., J. B. Liebman, and L. F. Katz (2007): "Experimental analysis of neighborhood effects," Econometrica, 75, 83–119.

Kling, J. R., S. Mullainathan, E. Shafir, L. C. Vermeulen, and M. V. Wrobel (2012): "Comparison Friction: Experimental Evidence from Medicare Drug Plans," The Quarterly Journal of Economics, qjr055.

Kremer, M., R. Glennerster, et al. (2011): "Improving Health in Developing Countries," Handbook of Health Economics, 2, 201–315.

Kremer, M. and E. Miguel (2007): "The Illusion of Sustainability," The Quarterly Journal of Economics, 122, 1007–1065.

Laibson, D. (1997): "Golden Eggs and Hyperbolic Discounting," Quarterly Journal of Economics, 112, 443–477.

Ma, X., S. Sylvia, M. Boswell, and S. Rozelle (2013): "Ordeal mechanisms and information in the promotion of health goods in Developing Countries:'Evidence from rural China," Rural Education Action Project Working Paper.

Madajewicz, M., A. Pfaff, A. van Geen, J. Graziano, I. Hussein, H. Momotaj, R. Sylvi, and H. Ahsan (2007): "Can information alone change behavior? Response to arsenic contamination of groundwater in Bangladesh," Journal of Development Economics, 84, 731–754.

Meredith, J., J. Robinson, S. Walker, and B. Wydick (2013): "Keeping the doctor away: Experimental evidence on investment in preventative health products," Journal of Development Economics, 105, 196–210.

O'Donoghue, T. and M. Rabin (1999): "Doing it now or later," American Economic Review, 103–124.

Oxley, H. (2009): "Policies for Healthy Ageing: An Overview," OECD Health Working Paper 42, OECD.

Royer, H., M. F. Stehr, and J. R. Sydnor (2015): "Incentives, commitments and habit formation in exercise: evidence from a field experiment with workers at a fortune-500 company," American Economic Journal: Applied Economics, 7, 51–84.

Thornton, R. L. (2008): "The Demand for, and Impact of, Learning HIV Status," American Economic Review, 98, 1829–63.

Tversky, A. and D. Kahneman (1991): "Loss aversion in riskless choice: A reference-dependent model," The Quarterly Journal of Economics, 106, 1039.

Volpp, K. G., L. K. John, A. B. Troxel, L. Norton, J. Fassbender, and G. Loewenstein (2008): "Financial incentive–based approaches for weight loss: a randomized trial," Jama, 300, 2631–2637.

Volpp, K. G., A. B. Troxel, M. V. Pauly, H. A. Glick, A. Puig, D. A. Asch, R. Galvin, J. Zhu, F. Wan, J. DeGuzman, et al. (2009): "A randomized, controlled trial of financial incentives for smoking cessation," New England Journal of Medicine, 360, 699–709.