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A Fistful of Dollars
Financial Incentives, Peer Information, and Retirement Savings

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Abstract

To understand what motivates individuals to look at their pension situation and take adequate savings decisions, we conduct two field experiments with 226,946 and 257,433 pension fund participants. We find peer-information statements do not increase the rate at which individuals check their pension information, but lottery-type financial incentives do. Offering a few large prizes rather than many small prizes is most effective. However, the uptake of pension information does not lead to improved pension knowledge nor to increased self-reported savings three weeks after our intervention.

Under-saving for retirement is a major economic and societal challenge for many economies. Benartzi and Thaler (2013) diagnose a "retirement savings crisis" in the US as more than half of the US population is at risk of inadequate funding to maintain their current lifestyle. In Europe, more than 18% of people aged 65 and over are at risk of poverty or social exclusion (EU (2018)). However, awareness of a potential savings gap is generally low, and current pension communication is predominantly ineffective (Prast and van Soest (2014), Debets et al. (2018)).

Effective communication is crucial for individuals to make adequate savings decisions. Evidence on the effectiveness of information provision and financial education is mixed. Often people avoid information if the resulting insights are uncertain and potentially negative (Karlsson, Loewenstein, and Seppi (2009); Sicherman et al. (2016); Golman, Hagmann, and Loewenstein (2017)). Consequently, several overview studies find little evidence of causal effects of information provision and financial education programs to increase financial literacy or influence financial behavior (Hastings, Madrian and Skimmyhorn (2013); Fernandes, Lynch and Netemeyer (2014)). On the other hand, Kaiser et al. (2020) conduct a recent meta-analysis and find financial education programs do increase financial literacy, which in turn improves financial behavior.

In this paper, we analyze two field studies in which we investigate whether peer information and financial incentives are effective in triggering people to look up information about their pension, to improve their knowledge, and to change their self-reported savings behavior. Our analysis is guided by an adapted version of the Decision States Model (DSM), which conceptualizes the savings-decision-making process according to several sequential steps (Bateman et al., 2014). First, fund members are unaware of a potential savings gap. Second,

communication from their pension fund can make members aware of a potential savings gap. Third, members can look up personal information to find out how much money they will receive at retirement. Fourth, they might become capable of making a decision about adjusting their behavior by increasing their knowledge. Fifth, members decide whether to increase their savings.

One potential way to increase people's interest in their personal retirement situation is to use peer information. A large number of studies show peer information has positive effects on desired behavior (e.g., Duflo and Saez (2002, 2003), Allcott (2011), Hallsworth et al. (2017), Bott et al. (2020)). For example, Maturana and Nickerson (2019) conclude teachers are more likely to refinance their mortgage if teachers in their peer group have refinanced their mortgage in the last three months. Yet, other studies find no or negative effects of peer information in a different but related context (e.g., Beshears et al. (2015), Lieber and Skimmyhorn (2018), Cranor et al. (2020).

Alternatively, financial incentives could be used to trigger looking at pension information. Incentives are key to economics and have been shown to work in various settings, from education to health care and beyond. Yet, for financial decision-making, the evidence on the effectiveness of incentives is mixed (Duflo and Saez (2003), Duflo et al. (2006), Choi, Laibson, and Madrian (2011)). Karlan et al. (2016) find mentioning financial incentives in reminder messages increases the attainment of savings goals that individuals set in commitment savings accounts, whereas Choi, Laibson, and Madrian (2011) find no effect of a survey informing employees of employer-matched pension contributions. An open question is therefore whether peer information and financial incentives can also be used to increase individuals' likelihood of looking at their pension savings situation. Our field experiments allow us to answer this question and shed light on which types of

peer information and financial incentives are most effective.

The two natural field experiments (Harrison and List (2004)) are highly powered with 226,946 participants in Study 1, and 257,433 participants in Study 2. We pre-registered both studies at the AEA RCT Registry.[4] The participants all work in the retail sector in the Netherlands and are part of the same pension fund, Pensioenfonds Detailhandel. The Dutch retirement system consists of a flat-rate public pension (first pillar), a funded occupational pension system in which most employees are automatically enrolled (second pillar), and private retirement accounts (third pillar). In the second pillar, most individuals belong to occupational schemes that are hybrid defined-benefit plans with benefits based on lifetime average earnings. Pension contributions are compulsory, and individuals cannot choose the pension provider, because they are stipulated in industry-wide agreements. Pension benefits are not guaranteed and depend on the financial performance of the fund, interest rates, and longevity.

Although the Netherlands has a well-regarded pension system (Mercer (2020)), one in three individuals is at risk of having too little savings when going into retirement, mostly because of long periods of low interest rates (De Bresser and Knoef (2015)). Consequently, under-saving is also a problem in this highly rated and relatively well-funded pension system. Individuals can fill this gap with additional private savings outside of their mandatory pension plan, but only a small fraction do. For example, 26.8% of our study participants privately save for retirement.

Before pension fund participants know whether they require additional savings for their

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[4] Study 1 has been registered on https://www.socialscienceregistry.org/trials/987, and Study 2 on https://www.socialscienceregistry.org/trials/3144

retirement, they need to be aware of their potential savings gap. Yet, this awareness is low at the pension fund in our study. In a survey in 2016, we asked fund members whether they could expect 70% of their final salary to be paid out as their retirement income. Of the 789 survey respondents, 25.6% answered "I do not know," and 46.5% incorrectly answered "yes." The pension fund aims to provide a retirement income of 70% of the average salary, considerably lower than the 70% of the final salary in most cases.

As part of our field experiments, the pension fund sent out a letter inviting members to visit an online personal pension planner so they could gain insight into their personal pension situation. The pension planner first showed which retirement income (both flat-rate state pension and second-pillar occupational pension) members would receive at their standard retirement age if they worked in the same employment position until retirement. In the next steps, members could change the parameters of the calculation by, for example, retiring part-time, adding pension entitlements from another pension fund, or exchanging the partner pension to receive more pension oneself.

In both studies, participants randomly received one of six letters. The control group received a letter in the regular communication style of the pension fund. In Study 1, four treatments contained a peer-information statement. We use a 2x2 between-subjects design. Two peer information letters included an additional sentence that focused on retirement income, whereas the other two letters focused on retirement savings. One of each letter focusing on income or savings highlighted a positive outlook, and the other highlighted a negative outlook. With this study design, we sought to elicit whether a focus on means or a focus on goals is better for goal pursuit in the retirement context (Ülkümen and Cheema (2011), Freund and Hennecke (2015)) and whether a fear appeal

motivates participants to change attention and behavior (Witte and Allen (2000)). In the financial-incentive treatment of Study 1, we announced that 100 people who logged into the pension website would receive a voucher worth €25 ($29.64, converted on November 22, 2020). The participants could spend this voucher in many different stores in the Netherlands. The probability of winning depended on how many people in each treatment group logged in to the website, a response rate that was ex-ante unknown. Studies commonly use raffling a fixed number of prizes among survey respondents, with unknown ex-ante probabilities of winning, to incentivize survey completion (Laguilles, Williams, and Saunders (2011)). In our setting, participants who were only motivated to win the lottery prize might have logged in and then immediately left the website, without looking at their personal pension information. In this case, the treatment would be effective in triggering people to visit the pension fund's website, but it would still fail to increase interest.

We find participants who received any of the peer information letters were not more likely to look at the pension planner than participants who received the control letter. Participants who received the Saving-Fear or the Income-Hope letters were even 0.3 percentage points less likely to look at the pension planner. By contrast, the financial incentive increased the information rate by 1.1 percentage points, a 50% increase over the control group in Study 1 (2.2% of participants in the control group looked at the pension planner). A back-of-the-envelope calculation shows the average cost per additional person looking at pension information via the financial-incentive treatment was €6.05 ($7.17).

In Study 2, we explored whether splitting up the same financial incentive in many small prizes or in a few large prizes would be most effective in increasing participants' likelihood of looking

at information. On the one hand, prospect theory (Tversky and Kahneman (1992)) predicts people will overweight small probabilities, and they might therefore respond more strongly to the chance of winning a few large rewards rather than many small rewards.[5] Moreover, members might largely ignore the unknown probabilities of winning and thus focus on the large, more salient prizes. Loewenstein et al. (2001) find people tend to be insensitive to the probability of winning, which makes raffles with a few large prizes with small probabilities more attractive. On the other hand, a robust finding in the literature on state lotteries and casino gambling is that people are more likely to play lotteries and engage in gambling that offer a lot of small prizes (for a review, see Grote and Matheson (2013)). Moreover, slot machines, optimally designed to keep people gambling, raffle many small prizes and rarely a large prize (Edwards, 1956). Overall, which division of the prize money would work best was unclear.

In Study 2, we therefore split up the same amount of money for each treatment into a large number of small prizes, a few large prizes, or a combination of small and large prizes. We find a few larger prizes were more motivating in getting participants to look at retirement information than many small prizes or a combination of small and large prizes. Participants in the lottery that raffled two large amounts were 86% more likely to look at the pension planner than were participants in the control group (an increase from 4.3% in the control group to 6.7%). Here, the

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[5] Many studies find behavior according to prospect theory. However, Castleman, Patterson and Skimmyhorn (2020), in a large field experiment, find no evidence for the implications of prospect theory. They analyze whether gain-loss framing of letters providing information about interest rate protection for US Army soldiers decreases credit card balances and average credit card interest rates. They find no difference between servicemembers who received the letter emphasizing the lost money due to not invoking the interest rate protection and servicemembers who received letters emphasizing the benefits of that protection.

cost of the financial incentive to get one additional participant looking at the pension planner was only €1.27 ($1.51). We also find larger incentives increased the likelihood of spending more time on the pension planner, even for the likelihood of spending more than 10 minutes. Hence, the way the prize money was split had a large influence on the effectiveness of the incentive.

Perhaps the most important question is whether looking at the pension planner affects the knowledge of pension matters of fund members and their subsequent savings decisions. We test this possibility with the help of a survey administered three weeks after Study 2. We find that visiting the online pension planner had no causal effect on participants' pension knowledge. Our instrumental-variable regressions show participants who looked at the pension planner performed as poorly on a pension-knowledge quiz three weeks after our intervention as participants who did not look at the pension planner. All answers to the quiz questions could have been either found in the pension planner or directly on the pension fund's website that contains the planner. Yet, participants did not retain this information three weeks after our intervention, regardless of whether we focused on all quiz questions or only those referring to the planner. Visiting the pension planner also did not causally increase the likelihood of reporting additional private savings for retirement three weeks after the intervention. Thus, although incentives increased the likelihood of looking up pension information, they did not improve retirement knowledge nor affect self-reported savings.

Our findings contribute to several streams of literature. First, we add insights to the literature on retirement decision-making. Lusardi and Mitchell (2007, 2008, 2011a, 2011b, 2017) report that few people make financial plans for their retirement. How should policymakers respond to this

fact? Our results show peer-information provision does not increase the rate of fund members who look up pension information; some even decrease this rate. This finding is in line with findings by Beshears et al. (2015), who discover that older members in particular feel discouraged by information on others' contribution behavior. Our findings are also consistent with Lieber and Skimmyhorn (2018), who conclude the savings of US soldiers' peers do not influence those soldiers' own savings.

Second, our findings add to prior literature on the effectiveness of providing financial incentives. Previous evidence is mixed. Choi, Laibson, and Madrian (2011) find financial incentives in the form of matching contributions do not motivate employees to take up a pension plan. On the other hand, Duflo and Saez (2003) use a financial reward for attending a retirement information fair and find that it increases fair attendance and enrollment in a pension plan. Duflo et al. (2006) document that matching incentives increase the amounts individuals save in tax-deferred retirement accounts. Our two field experiments show that even a small financial incentive in the form of a lottery can be enough to substantially increase the likelihood of looking at retirement information. We also show that offering a few large incentives is more effective than offering many small incentives, while keeping the total budget constant. Previous studies that show larger incentives work better than smaller incentives did not keep the budget between treatment groups constant, and larger incentives were thus more expensive (Charness and Gneezy (2009) for gym attendance, Volpp et al. (2008) for adherence to medication plans, Björkman Nyqvist et al. (2018) in the context of HIV prevention). Our results show pension funds can increase the effectiveness of financial incentives to look at information, without increasing the required budget.

However, this effectiveness is limited. Incentives do not improve pension knowledge or affect self-reported savings.

Third, our findings complement prior studies on financial literacy. Lusardi and Mitchell (2011b) demonstrate that financial literacy is an important factor for retirement planning. Van Rooij, Lusardi, and Alessie (2012) and Alessie, van Rooij, and Lusardi (2011) show financially literate people in the Netherlands are more likely to plan for their retirement and have higher household wealth than financially illiterate individuals. A key advantage of our study design is that we measured pension knowledge three weeks after we conducted our field experiment and find no effect. Given the importance of financial literacy and the mixed evidence on the effectiveness of financial education programs, more work is needed to understand how to improve financial knowledge.

I. Background of the Study

A. *The Dutch Retirement System*

The Dutch retirement system consists of three pillars. The first pillar is a pay-as-you-go state pension. The monthly flat-rate payment is linked to the minimum wage in the Netherlands. The full amount is paid out to the individual if she has lived in the Netherlands for 50 years before the state retirement age. Otherwise, the amount depends on how many years the individual has stayed in the country. Singles receive 70% of the minimum wage, whereas each member of a couple receives 50%. If pensioners are still below a certain minimum of income and wealth, they can receive social benefits. The second pillar contains a funded occupational pension system, in which

most employees are automatically enrolled. Ninety percent of the plans are (predominantly) so-called hybrid defined-benefit pension plans, whereas the remaining 10% are defined-contribution or collective-defined-contribution plans. Hybrid defined-benefit pension plans offer conditional indexation. If the funding level of the pension plan is below a certain threshold, full indexation (adjusting pension payments to the price or wage inflation rate) does not take place, resulting in a pension cut in real terms (Kortleve and Ponds (2010)). Since the financial crisis in 2008, many pension funds have had to lower indexation, some even to zero (Dreger and Heemskerk (2016)). The third pillar consists of private retirement savings accounts, which have become increasingly important due to the recent financial crisis and the long period of low interest rates (Knoef et al. (2016)).

In 2020, the Netherlands is ranked highest in the Mercer CFA Institute Global Pension Index (Mercer, (2020)). The index assigns scores to 39 national retirement income systems, based on questions relating to the adequacy of a country's pension system, its sustainability, and its integrity. Despite its high ranking, the adequacy and sustainability of the Dutch pension system is suffering from the consequences of an aging population, the low-interest-rate environment and an increasing number of people not being covered by the well-developed second-pillar pension. The pension system could be improved with an increase in household savings and a reduction of household debt (Mercer (2020)).

By giving fund participants information on the first- and second-pillar pensions, they can decide on their third-pillar savings. Through the "Wet Pensioencommunicatie" ("Law Pension Communication," effective from July 1, 2015, onwards), the Dutch government acknowledges the

importance of pension communication, by requiring funds to communicate correctly, balanced, and according to the needs and characteristics of their participants. The law's objectives are that participants know which income they can expect in retirement, that they can learn whether this pension provides an adequate lifestyle at retirement, that they are aware of any risks around their pension, and that pension communication shows the participants' possible actions to improve their financial situation in retirement. Since 2008, pension funds are obliged to send a Uniform Pension Overview (UPO) to active participants by regular mail once a year. The UPO informs participants about how much annual retirement income they have accrued until now and how much they will accrue if they continue working in the same job until retirement. Because the UPO is standardized across pension funds, participants can compare and add up their pension rights accrued from different pension funds.

B. *The Pension Fund for the Retail Sector*

We conduct our studies with participants of one of the 10 largest Dutch pension funds: the pension fund for the retail sector. The pension fund is a defined benefit plan and has approximately €29 billion assets under management and 1,225,000 participants (retired, active, and passive).[6] Active workers in the retail sector make mandatory contributions to the pension fund on a monthly basis. Table I shows demographics of those active participants of the pension fund for the retail sector at the time of Study 1 and Study 2 for whom we observe full information (226,946 active participants

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[6] Information on the pension fund's assets under management and participant base are as of August 10, 2020.

in Study 1 and 257,433 in Study 2). Sixty-nine percent of the participants are female in Study 1, 66% in Study 2. The fund population is young: 57% are between 20 and 40 years old. The average FTE is 0.67 in Study 1 and 0.69 in Study 2. In both studies, 39% of the participants report having a partner. The average nominal salary in Study 1 is €18,358 and €22,417 in Study 2. Because particularly low-educated women are at risk of poverty in old age (OECD (2017), EU (2017, 2018)), we study a sample of the Dutch population that is more exposed to financial hardship than the general population.

[TABLE I HERE]

Most of the time, the pension fund for the retail sector communicates with fund participants after participants contact the fund. Unsolicited communication takes place when a new fund member starts working in the retail sector or when the pension fund sends out the UPO between May and July every year. The pension fund additionally publishes a quarterly magazine called "Jij & Wij" ("You and We"). The magazine covers personal stories on employees and store owners in the retail sector, articles about retail trends, and Q&As about the pension fund's policy and implementation.

The fund also offers an online personal platform for each fund participant, called "Mijn Omgeving" (i.e., "My Environment" in English).[7] Participants can log in to their platform to see what information the pension fund has about them and whether it is correct. They can look at past communication with the pension fund, download forms for requests (e.g., to inform the pension

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[7] Screenshots of the personal platform and the pension planner as well as translations of the platform and the planner are provided in Internet Appendix C.

fund of a partner), and look at their personal pension planner. The pension planner shows how much salary the participant currently receives and compares this amount with the projected pension payments (both from the state pension and the pension accrued at the pension fund). Participants can also change parameters of the projections to see how retiring later or earlier, for example, affects the pension level. Compared to the UPO, the pension planner lets the participant experience what decisions one has and what they mean for the projected retirement income. In addition, participants might receive the UPO at a time when they do not think about their pensions and might not need it. The pension planner shows information that is always accessible, whenever the participant needs it.

C. *The Way from Unawareness to Savings: A Multi-step Approach*

We investigate what motivates individuals to look up information about their personal retirement situation so they have sufficient pension knowledge for making adequate savings decisions. This savings-decision-making process of pension members consists of several stages. We follow frequently used models from consumer behavior, which describe consumer behavior with so-called "hierarchy-of-effects" or "consumer funnels" (Barry (1987), Murray and Vogel (1997), Kireyev et al. (2016)). The idea behind these models is that consumers go through different stages before they make a purchase, starting from being unaware of the product/brand, continuing with acquiring more information and knowledge about the product/brand, and eventually making the purchase. Each stage is crucial for the final outcome. Bateman et al. (2014) developed such a consumer funnel model in the context of financial decision-making, the Decision States Model

(DSM). How quickly consumers transition from one stage to the next depends on various individual and market factors (e.g., financial literacy, income, and information).

We make minor adjustments to the DSM model to fit our setting (Figure 1). In the first stage, members are unaware of their potential savings gap. In 2020, only 50% of a sample representative of the Dutch working population had thought about both income and expenses (Wijzer in Geldzaken (2020)). So, although a third of the Dutch are at risk of a savings gap, only half of the Dutch are likely to know whether their savings level is adequate. Communication from the pension fund may make members aware of the possibility of a savings gap.

However, being aware of a potential savings gap does not automatically lead fund members to look up personal pension information. Sicherman et al. (2016) and Golman et al. (2017) provide several reasons why people avoid information that could enhance their decision-making, such as anxiety, limited attention, regret aversion, and positivity maintenance. People could avoid seeing information on their savings to avoid the negative utility from realizing they have too little savings. Pensions are also a complex matter and just one of many other issues people need to think about. Without a more urgent incentive, looking up pension information is not easy. Providing financial incentives could trigger individuals to check their personal pension information.

Once pension members look up information, they might improve their pension knowledge and seek to find ways to decrease their potential savings gap. The importance of numeracy, financial knowledge, and the role of capability in financial decision-making have been stressed by a broad literature (Hastings, Madrian, and Skimmyhorn (2013), Lusardi and Mitchell (2014), Kaiser et al. (2020)). More specifically, Lusardi (2009) and Lusardi and Mitchell (2007, 2011a, 2017)

demonstrate financial literacy is an important factor for retirement planning. Van Rooij, Lusardi, and Alessie (2012) and Alessie, van Rooij, and Lusardi (2011) show financially literate people in the Netherlands are more likely to plan for their retirement and have larger household wealth than financially illiterate individuals. Bateman et al. (2018) find numeracy is positively linked with the decision to insure oneself against a high risk of adversity in retirement.

Although robust correlations between financial knowledge and financial decisions have been reported, causal evidence has been weaker (Hastings, Madrian, and Skimmyhorn (2013)). For example, Fernandes, Lynch and Netemeyer (2014) conduct a meta-analysis and show only 0.1% of the variance in behaviors studied is explained by interventions that aim to increase financial literacy. On the other hand, a recent meta-analysis of randomized controlled trials (RCTs) finds financial education programs do increase financial literacy and trickle through to financial behaviors (Kaiser et al. (2020)). For the savings domain, a financial education program leads to an average increase in savings of 0.097 SD units.

In the last stage, members decide whether to increase their savings in the third-pillar private savings account. Several previous studies explore the effects of information provision and its trickle-down effect on savings. Carter and Skimmyhorn (2018) show personalized, salient information on future retirement benefits does not affect current retirement savings. Mastrobuoni (2011) finds informing workers about their estimated retirement benefits increases workers' knowledge about their benefits, but workers do not change their retirement behavior. Choi, Laibson, and Madrian (2011) analyzed whether a survey including questions explaining foregone employer-matched savings would lead to higher contribution rates in 401(k) plans. Compared with

survey respondents who received the control survey without these questions, respondents to the treatment survey did not increase tax-advantaged retirement savings. Most studies thus find no effect of information provision on retirement savings behavior, but some find suggestive evidence for effects on financial knowledge.

[FIGURE 1 HERE]

Our field studies track the different stages of this decision-making process as follows. The goal of all the letters sent out by the pension fund, including the control letters, was to make participants aware of their potential savings gap ("*With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate*"). We designed the treatment letters to increase the participants' interest in finding out about their own situation. We observe whether participants move to the third state as we know whether they look at their personal pension planner during the study periods. The next stage of the DSM is whether individuals are knowledgeable about pensions. With the pension knowledge quiz after Study 2, we test whether participants have acquired additional knowledge.

The final stage in the decision-making process is deciding whether to save additionally. If people lack pension knowledge, they might simply not decide on additional savings, and their savings gap would persist. In the survey after Study 2, we measure whether participants have saved additionally by asking participants to report whether they have saved more for their pension over the last three weeks, the period between our field study and follow-up survey. We thus observe whether triggering participants' interest in the pension planner trickles down and affects the decision to save more privately. In our study, we observe self-reported savings only, because the

fund does not have information about savings outside of the pension fund. We do not observe whether members increase their savings after three weeks.

II.   Study Design

In both field studies, we sent out different letter types to the active participants of the Dutch pension fund for the retail sector.[8] Given that the city councils forward address changes within the Netherlands to the pension fund automatically, non-deliverable rates are very low. All letters aimed at motivating pension fund participants to go to the fund's website and log in to their personal platform to look at personalized retirement information. We measure who logged in to the platform and when. Furthermore, the data show what the participants clicked on within their personal platform and when they did so. We can thereby see who visited their personal pension planner and for how long.

In each experiment, we randomly allocated participants to one of six treatments. Randomization checks confirm successful randomization (see Internet Appendix A). We aimed to decrease the risk of a low response rate due to participants' fear of phishing in two ways. First, the letters were sent via the magazine of the pension fund, and thus were part of the pension fund's official communication. Second, the participants had to log in with their DigiD, a login system used by the Dutch government and institutions such as pension funds and health insurance providers. Nevertheless, because we cannot verify who read the letters, all analyses of treatment effects based

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[8] Because the pension fund did not have a database with e-mail addresses of a representative sample of the pension fund, we opted to send letters as the means of communication.

on the letters are intention-to-treat analyses. Given the features of our experiments, we classify them as natural field experiments (Harrison and List (2004)).

The core text of the treatment letters in both studies is the text of the baseline letter. In every treatment letter, we added one sentence to the baseline text. With only one sentence varying between treatments, we can measure clean treatment effects, because we do not differ other variables such as the length of the letter. Furthermore, studies such as Bott et al. (2020), Bhargava and Manoli (2015), Hallsworth et al. (2017), and Goldin et al. (2020) show that adding one sentence is effective. The added sentence was printed in bold in order to be more salient. The next paragraphs describe the messages in more detail. The (translated) wording of the letters can be found in Internet Appendix B.

A. Study 1

On December 22, 2015, we sent out six different letter types to all 245,721 active participants at the time. We measured website behavior until February 1, 2016.

The Baseline. The baseline letter contains the text that all other letters display as well. It informs the pension fund participant about the pension fund's new website and the personal pension platform of the participant. The letter clarifies the importance of retirement planning to be able to know the level of pension entitlements one has accrued so far.

Peer-Information Treatment Letters. We test four different peer information treatments that vary a positive or negative outlook as well as a focus on retirement savings or income:

1. Income—Fear: This letter focuses on the goal of retirement savings: retirement income. It

includes a fear appeal because it emphasizes that people might not have adequate retirement income. The added sentence reads, "**A large part of people in the Netherlands think that they will have <u>a too low</u> income to retain their current level of consumption in retirement. What about you?**"

2. Income—Hope: This letter displays the goal focus and a positive description to focus on the positive, hopeful content: "**A large part of people in the Netherlands think that they will have <u>enough income</u> to retain their current level of consumption in retirement. What about you?**"

3. Savings—Fear: This letter focuses on the means to achieve retirement income, namely, saving for retirement. It also uses a fear appeal, as in the second letter: "**A large part of people in the Netherlands think they <u>save too little</u> to retain their current level of consumption in retirement. What about you**?"

4. Savings—Hope: This letter shows the means focus with a positive description of the peer information: "**A large part of people in the Netherlands think they <u>save enough</u> to retain their current level of consumption in retirement. What about you**?"

The Financial Incentive. The financial-incentive letter includes an additional sentence written in bold: "**Among all participants who log in, we are raffling 100 VVV gift vouchers worth €25.**" VVV gift vouchers are vouchers from the tourism association in the Netherlands. They are usable in over 24,000 Dutch shops. Note that entering the prize draw is conditional on logging in to MyEnvironment, not on looking at the pension planner. We are interested in whether individuals have looked at the pension planner.

B. Study 2

On May 15, 2018, we sent out six different letter types to all 274,279 active participants at the time. We investigate whether, given a fixed budget, raffling a few large prizes, a larger number of small prizes, or a combination of both is most effective in increasing individuals' likelihood of looking at their pension situation.

The Control Letter. The control letters in Study 1 and Study 2 show the same text, in the standard communication form of the pension fund.

100*€20. We added the following sentence to the baseline letter: "**Among all participants who log in, we are raffling 100 VVV gift vouchers worth €20.**"

200*€10. The treatment sentence reads: "**Among all participants who log in, we are raffling 200 VVV gift vouchers worth €10.**"

100*€10 and €1,000. We raffled several smaller amounts and one big amount. We added "**Among all participants who log in, we are raffling 100 VVV gift vouchers worth €10 and one VVV gift voucher worth €1,000.**"

4*€500. We increased the raffled amount and decreased the chance of winning. The treatment sentence reads: "**Among all participants who log in, we are raffling four VVV gift vouchers worth €500.**"

2*€1,000. We tested whether raffling two large amounts is the most effective treatment by adding "**Among all participants who log in, we are raffling two VVV gift vouchers worth €1000.**"

The last day we measure website behavior is June 25, 2018. Because saving more than the

default contribution rate via the pension fund is impossible, we do not have information on changed savings behavior from the administrative dataset. Three weeks after the letters were sent out, we thus invited participants for whom the pension fund had e-mail addresses (49,552) to an online survey. Of those invited, 4,395 initiated the survey, and 2,507 completed questions on financial knowledge and savings behavior. In the end, we can match 2,231 respondents to the experimental dataset. We describe the variables used in our analysis that are taken from the survey in section III.B and present descriptive statistics of the survey sample in section IV.

III.   Data

In both studies, our final dataset stems from two data sources. Section III.A describes the administrative data source, and section III.B describes the data obtained through the two studies.

A. Background Variables

The administrative datasets are provided by TKP, the delegated pension administrator of the pension fund for the retail sector. For Study 1, the data contain the full set of demographic statistics of 226,946 active pension fund participants at the beginning of February 2016. For Study 2, we have access to data on 257,433 active pension fund participants at the end of June 2018. Variables of interest are the following:

Gender: Gender is a binary dummy equal to 1 if the participant is male, and 0 when female. We use gender as a control in our regressions, but also for our heterogeneity analysis to see whether men's reactions to a treatment letter differ from female's.

Age: The variable displays the participant's age in February 2016 and in July 2018, for Study 1 and Study 2, respectively. For the graphs in the heterogeneity analysis, we build a dummy which is equal to 1 if the participant's age is above the median age, and 0 otherwise. For most regressions, we use a factor variable with five levels: ages below 30 years, ages 30–39, ages 40–49, ages 50–59, and ages above 60 years.

Full-time equivalent (FTE): This variable displays the ratio of the participant's contract hours to the hours of a full-time contract. For the regressions, we use a categorization. We categorize participants who work full time (i.e., have an FTE of 1) as full-timers, and participants who work more than 0 hours, but less than full time, as part-timers. We drop all observations of participants who work 0 hours, because they do not build up any pension benefits. This process results in dropping 16,490 observations in Study 1 and 16,192 in Study 2.[9]

Partner: The variable is binary, with a value of 1 when the participant has a partner registered in the administrative database of the pension fund, and 0 otherwise. Information on marriages and civil unions are automatically transferred to the pension fund, but fund members can also register a partner they live with for more than six months.

Income: This variable is the annual gross salary and is winsorized at the 1% and the 99% levels in order to replace extreme values. For the heterogeneity analysis, we build a dummy indicating whether a participant is above the median income (value=1) or below (value=0). For most regression analyses, we use a factor variable with five levels, where each level represents one

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[9] Results are robust when we include observations with missing values. Results are available from the authors upon request.

quintile of the income distribution.

Province dummies: By using the participants' postal code, we determine the province where the participant lives. We use a factor variable with 12 levels in the regressions to check for regional effects. We drop observations for which the information is missing (2,285 for Study 1 and 654 for Study 2).

B. Outcome Variables

The pension administrator of the pension fund provided administrative data on outcome variables of our study. For both studies, the datasets show the participants' website behavior within the 40-day period after the letters were sent out. We expect that the data spanning over this period capture most of the behavior caused by the letters. Variables of interest are the following:

Pension Planner: This variable is binary, displaying whether the participant clicked on the pension planner at least once between December 22, 2015, and February 1, 2016, for Study 1, and between May 15, 2018, and June 25, 2018, for Study 2. The pension planner shows the current income as well as the pension payment that can be expected when the participant continues working until her retirement age. As one of our main dependent variables, it measures whether participants look at their personal pension information.

Variables on total time spent on Pension Planner: For Study 1, we observe the hour and minute a participant visited any page on MyEnvironment, or when they logged out. For Study 2, we received more precise data and observe the hour, minute, and second a participant clicked on the pages within MyEnvironment, or when they logged out. For both studies, we calculate how much

time participants spent in total on the pension planner during the study periods mentioned above. We take the difference between the time a participant clicked on the pension planner and the time of her next click on the page (including clicking to log out). We then sum up the time spent on the pension planner for each visit over all visits during the study period. We winsorize at the 1% and the 99% levels and then create three binary variables. *More Than 1 Minute* indicates the participant spent more than 1 minute on the pension planner, *More Than 5 Minutes* indicates the participant spent more than 5 minutes on the pension planner, and *More Than 10 Minutes* indicates the participant spent more than 10 minutes on the pension planner. Because some participants did not log out or visit another page on the personal platform after visiting the pension planner, we lack information about the time on the pension planner for 1,650 out of the 5,155 participants on the planner in Study 1 and for 4,461 out of 16,650 participants for Study 2. We interpret the time spent on the pension planner as an indicator of the intensity of this state of the DSM.

Pension knowledge: In the survey sent out three weeks after the experiment in Study 2, we asked six questions to test participants' capability in the pension domain, pension knowledge. We selected the questions so that we would have a balance of questions specific to the pension planner, the pension plan of the pension fund, and general knowledge of the Dutch pension system. Questions were taken from Knoef, Been, and van Putten (2020), as well as created by the authors. Internet Appendix D lists where the answers to the questions can be found on the pension fund's website. The questions were as follows (* indicates the correct answer):

1. On *Pensioenfonds Detailhandel*'s pension planner, you can enter the age at which you wish to retire. As it stands, can you see how the age of retirement affects the size of your pension? (Yes*/No, not in this version of the planner/ I don't know)

2. You can tailor your own investment portfolio on *Pensioenfonds Detailhandel*'s website. (True/False*/I don't know)

3. Who pays the pension contributions for employee pensions? (Usually only the employee/ Usually only the employer/ Usually both the employee and the employer*/I don't know)

4. In the last two years, product prices in the Netherlands have risen. Did your pension with *Pensioenfonds Detailhandel* grow in line with price increases in the last two years? (This process is called indexation) (Pensions matched price increases/ Pensions did not match price increases*/I don't know)

5. If you have accrued pension with *Pensioenfonds Detailhandel* and you get a new job, can you choose to transfer the accrued amount to another pension fund? (Yes*/No/I don't know)

6. When you retire, you can choose to receive a higher amount at the beginning of your pension followed by a slightly lower amount afterwards. (True*/False/I don't know)

The pension-knowledge variable used in our regressions is constructed by adding up the number of correct answers and then subtracting one point for each incorrect answer. If participants answer, "I don't know," they received zero points. The variable can range from -6 to 6. Our results are robust to using different scoring rules, see Appendix H.

Saved more: We asked the following questions to elicit self-reported savings behavior:

1. *Did you save for your retirement in the last three weeks (outside of your pension fund)?*

   26.8% answered Yes.

If participants answered yes, they were asked:

2. *Compared to the last months, did you save*

   a. *More in the last weeks (12.4%)*

   b. *The same in the last weeks (84.1%)*

   c. *Less in the last weeks (3.5%)*

The constructed variable *Saved More* displays whether the participant reported saving more in the weeks between Study 2 and the survey relative to not saving at all or saving the same or a lower amount.

IV.   Individual Characteristics and Website Behavior

This section describes the population of the pension fund's active participants as well as the subset of pension fund participants who looked at the pension planner. Table II compares the summary statistics of the administrative dataset between pension fund participants who did and did not look at the pension planner at least once. Of the 226,946 participants who received a letter in Study 1, we see 5,155 (i.e., 2.3%) looked at the pension planner at least once. That number is 73% of the participants who logged in to MyEnvironment (Table AIII in the Internet Appendix). Of the 257,433 participants who received a letter in Study 2, we see 16,650 (i.e., 6.5%) looked at the pension planner at least once. This number represents 30% of the participants who logged in to

MyEnvironment in Study 2. We generally see fund members spent more time on the pension planner in total in Study 1 than in Study 2 (5.5 minutes vs 2.7 minutes), but more people visited MyEnvironment in Study 2 than in Study 1. This finding is not surprising, because the personal online platform was new to participants in Study 1 and had already been around for two years in Study 2. Participants thus looked around more in Study 1 to explore MyEnvironment and its sites. For example, 67% of participants in Study 1 clicked on My Profile, but only 35% did so in Study 2. The annual pension overview can be viewed online as well, and participants can opt for exclusively receiving communication from the pension fund via the personal platform. Seventy-five percent of participants clicked on My Mail in Study 1, and 93% in Study 2. Our click-through rates are close to those of other studies that used letters to invite people to visit websites (see, e.g., Service et al. (2014)). In a study on information search of investors, Døskeland and Pedersen (2015) find only 0.8% of all participants clicked further to get more information.

[TABLE II HERE]

Comparing the demographics of the pension fund participants who looked at the pension planner with the demographics of those who did not, we find the following (Table II). During Study 1, 31% of participants who did not look at the pension planner are male, whereas 39% of participants online are male. On average, the participants who did not look at the planner are 37.3 years old. Individuals who clicked on the pension planner are older, with an average age of 43.5 years. Participants who checked the pension planner work more hours than those who did not, with a part-time factor of 0.69 compared with 0.67. Participants on the website earned more on an annual basis, on average (€21,360 vs. €18,288). All these differences are statistically significantly

different from 0 at the 99% confidence interval.

As in Study 1, the average pension fund participant who looked at the pension planner in Study 2 works more hours, earns more, is older, and is more likely to have a partner and to be male than the average participant who did not look at the pension planner. These differences are again statistically significant at the 99% confidence level. The differences can be explained by the fact that, on average, older individuals are more interested in the topics of pension and retirement, because it is a topic nearer to them (Alessie, van Rooij, and Lusardi (2011), Van Rooij, Lusardi, and Alessie (2012)).

Table II also shows descriptive statistics on the people who answered the pension-knowledge questions. This sample is older and more likely to be male and have a partner than the participants who did not answer the pension-knowledge questions. With an average income of €25,596, the sample participants also earn more income than participants who did not answer the pension-knowledge questions. In Appendix H in Table AIX, we regress whether participants initiated the survey on the treatment letters. We find a small positive effect of the *100*€10+€1,000* and *4*€500* treatment groups (0.2- and 0.3-percentage-point increase). Participants in the *200*€10* and *4*€500* treatment groups were 0.1 and 0.2 percentage points more likely to answer the pension-knowledge questions.

We control for these variables in our analyses. A potential selection effect could go in two directions. On the one hand, fund members with more income might have less need to save additionally. On the other hand, saving more may be easier for fund members with more income. We later use instrumental variables to take into account potential endogenous effects.

V. Study 1: What Increases Individuals' Likelihood of Looking at Personal Retirement Information?

In this section, we analyze the effectiveness of peer information and financial incentives to increase the likelihood of looking at one's personal pension situation. Figure 2 shows the financial-incentive letter was effective in heightening individuals' interest in looking at personal retirement information, whereas the peer information letters were not. In the control group, 2.2% of the pension fund participants visited their personal pension planner during the study period. On average, 2.2% of participants in the *Saving-Hope* group checked their personal planner as well, indicating no effect of the treatment letter on participants' interest. Participants in the *Income-fear, Income-Hope,* and *Saving-Fear* groups were even less likely to look up information than participants in the control group: on average, 2.0% looked at the pension planner. These results are in line with studies that find no or negative effects of peer information (e.g., Beshears et al. (2015)). In the *Financial-Incentive* treatment group, 3.3% looked at the pension planner. Given that a total of €2,500 was raffled in Study 1 and 413 additional people looked at the pension planner due to the financial-incentive treatment (1,258 in the financial-incentive treatment group minus 845 in the control group), the average cost of a participant looking at information was €6.05 ($6.82).

[FIGURE 2 HERE]

We run an OLS regression to control for demographics. The coefficients are presented in Table III. These results confirm the univariate analysis. The *Financial-Incentive* letter increased interest at the extensive margin by 1.1 percentage points (p<0.001), representing a 50% increase relative

to the baseline rate of 2.2%. The *Income-Hope* and *Saving-Fear* letters each decreased the likelihood of looking at the pension planner by 0.3 percentage points (p<0.01). Men were more likely to look at information than women (the baseline category). The effect of age is U-shaped. Participants between 30 and 50 years were less likely to look up their pension situation than participants younger than 30. Participants older than 49 were more likely to look at the pension planner than participants younger than 30. Being employed part time had a positive effect, as did belonging to the highest income quintile and having a partner.

[TABLE III HERE]

We calculate the total time on the pension planner per participant. On average, participants who looked at the pension planner spent 5.51 minutes in total (SD=8.81). The minimum time is 1 minute and the maximum time 85 minutes. This variation shows some participants seemed to click on the pension planner out of curiosity and then did not want to spend time to click through it, whereas others spent a considerable amount of time on the pension planner to see how different factors would affect their future pensions.

We therefore examine whether participants in the treatment groups stayed longer on the pension planner than the control group. Columns (2) to (4) of Table III show coefficients from OLS regressions with variables indicating a participant spent at least 1 minute, 5 minutes, or 10 minutes on the pension planner as dependent variables. Because 1,650 participants did not log out, and we thus do not observe exactly when participants stopped looking at the pension planner, the number of observations for these columns is smaller than the number of observations for Column (1). Column (2) shows participants in the *Financial-Incentive* treatment were 0.8 percentage points

more likely to look at the pension planner for more than 1 minute. As for the likelihood of looking at the pension planner, the *Saving-Fear* letter decreased the likelihood of looking at the pension planner for more than 1 minute by 0.3 percentage point. The effect of the peer-information treatments is no longer statistically significant in Column (3), meaning that participants were as likely to look at the pension planner for more than 5 minutes in the peer-information treatment groups as in the control group. Participants in the *Financial-Incentive* letter were 0.1 percentage points more likely to look at the pension planner for more than 5 minutes than the control group (p=0.008). In Column (4), we do not see an effect of any treatment group being more likely to look at the pension planner for more than 10 minutes.

Overall, we see the peer-information treatments were not effective, but that our financial incentive treatment in Study 1 was. In the remainder of the paper, we focus on the effect of financial incentives to motivate people to look at personal retirement information.

VI.   Study 2: Are a Few Large Incentives or Many Small Incentives More Effective?

We now focus on financial incentives in order to examine whether we can improve the positive effect of the financial-incentive treatment found in Study 1. We thus analyze the effects of varying financial-incentive letters, holding fixed the budget per treatment group. In the next section, we look at the consequences of the experiment on pension knowledge and self-reported savings.

As in Study 1, we observe whether an individual visited their personal pension planner during the study period. Figure 3 shows the two letters raffling a few large prizes were the most effective. Approximately 8% of participants receiving the larger-prize lotteries letter visited the pension

planner. The baseline letter triggered 4.3% of participants to look at their personal pension information. The other three letters resulted in between 5.8% and 6.7% of participants looking at the pension planner, being significantly more effective than the control letter but less effective than the lotteries with larger prizes.

[FIGURE 3 HERE]

We again run an OLS regression to control for demographics. The coefficients are presented in Column (1) of Table IV. All our treatments are statistically significantly different from the baseline letter (p<0.001). The *2*€1,000*-letter increased interest by 3.7 percentage points, and the *4*€500*-letter by 3.5 percentage points. This amount represents an increase of 86% and 81%, respectively, relative to the baseline rate of 4.3%. The other three lotteries increased interest by 1.5pp (35%), 2.1pp (49%), and 2.4pp (56%).

Given that we use a budget of €2,000 for this financial-incentive treatment and that 1,570 more people looked at the pension planner due to the *2*€1,000* treatment (3,402 in the *2*€1,000* treatment group minus 1,832 in the control group), the average cost of a participant checking the pension planner was €1.27 ($1.43) for the most effective financial incentive.

[TABLE IV HERE]

Similar to Study 1, men were more interested in their pension situation, and age had a U-shaped effect. Being a part-timer had a positive effect on looking up pension information, as did having a partner. In contrast to Study 1, participants in the second-, third-, and fourth-income quintile were less likely to look at the pension planner than participants in the lowest quintile. Participants in the highest quintile were again more likely to look at the pension planner than participants in the lowest

quintile.

In Study 2, participants spent an average of 2.72 minutes in total on the pension planner (SD=3.77). The minimum time is 0.08 minutes and the maximum time is 25.37 minutes. Again, some participants seem to have clicked on the pension planner out of curiosity and then did not want to spend time to click through it, whereas others spent a considerable amount of time on the pension planner to see how different factors would affect their future pensions.

In Columns (2) to (4) of Table IV, we show the coefficients of three additional OLS regressions to examine whether participants just quickly looked at the pension planner or spent more time on the planner. We again use binary variables as the dependent variables that indicate whether the participants spent more than 1, 5, and 10 minutes on the planner. In Column (2), the *2*€1,000*-letter increased the likelihood of looking at the pension planner for more than 1 minute by 1.8 percentage points (p<0.001), and the *4*€500*-letter increased it by 1.7 percentage points (p<0.001). Both of the larger lotteries (p<0.001) increased by 0.4 percentage points the likelihood of looking at the pension planner for more than 5 minutes. When examining the likelihood of looking at the pension planner for more than 10 minutes, the larger lotteries are still statistically significant, although the effect is small: an increase of 0.1 percentage points over the baseline group (p=0.001 for *4*€500*, p<0.001 for *2*€1,000*).

VII.   Effects on Pension Knowledge and Self-reported Savings Behavior

With the responses to the survey sent out three weeks after Study 2, we can investigate whether people who looked at the pension planner are more capable of making a savings decision. In

contrast to the intention-to-treat analyses above, we can observe who actually looked at the pension planner. We measure capability with the score on a pension-knowledge quiz. The average survey respondent scored 1.98 (SD=1.91). Table V shows the rates of participants who answered the questions correctly, wrongly, or answered "I don't know," overall and per treatment group. The question most people answered correctly was Question 3: 73% of participants knew both the employer and the employee pay pension contributions; 66% knew they could take their accrued pension with them to another pension fund; 48% answered correctly that no indexation (i.e., compensation for inflation) occurred in the two years prior to the survey; 41% knew they could enter their desired pension age in the pension planner and see how it affected their pension level; and 37% knew they could decide to receive a higher pension level for the first years in retirement and then switch to a lower level for the remaining years. Only 19% answered correctly that they could not change their investment portfolio in the pension planner, whereas 73% answered "I don't know." We only find a statistically significant difference between treatment groups for the rate of participants who answered incorrectly for question 2 (p= 0.01): 4% of participants in the *100*€20*-treatment group answered that question incorrectly, whereas 12% in the *2*€1,000*-treatment group did. As stated in Section III.B, to calculate the pension-knowledge score, we sum the number of correct answers and detract one point for each incorrect answer. As we show, the results are robust when we use a different scoring procedure.

[TABLE V HERE]

Figure 4 shows the average score from the pension-knowledge quiz for the participants who looked at the pension planner and for those who did not. Participants who viewed their planner

scored significantly higher on the pension quiz (M=2.26, SD=0.07) than participants who did not (M=1.83, SD=0.05) (t (2229) = -5.25, p<0.001). To see whether our results are robust to a different scoring procedure, Figure A13 shows participants who looked at the pension planner answered more questions correctly (without being punished for an incorrect answer). For the full picture, Figure A16 shows participants who looked at the pension planner answered, "I don't know"—less often than participants who did not look at the pension planner.

[FIGURE 4 HERE]

Although the correlational evidence shows better pension knowledge for people who looked at the pension planner, looking at the pension planner might be endogenous. If participants with better pension knowledge are more likely to look at the pension planner, a simple OLS regression could be prone to reverse-causality issues. Given the selection biases of who looked at the planner and who answered the survey after Study 2, we use a two-stage least-squares instrumental-variable approach in Table VI. We show the first stage in Column (1) and the second in Column (2). In the first stage, we regress the treatment dummies (as instrumental variables) and the standard control variables on *Pension Planner*. As shown in Table IV and as we can see in Table VI, Column (1), the treatment dummies and *Pension Planner* are positively correlated. The instrumental variables are exogenous because the assignment to a treatment group was random. Given the exogeneity, we should observe no direct correlation between treatment assignment and pension knowledge. The F-statistic of the test of the excluded instruments is $F(5, 2203)=8.87$ (p<0.001).

Column (2) shows the coefficient of *Pension Planner* is positive but not statistically significant in the second-stage regression. The weak-instrument robust Anderson-Rubin test also yields the

same conclusion (X^2(5, N =2,231)=3.01, p=0.70, 95% confidence interval of the *Pension Planner* coefficient [-1.90, 1.93]). In Table AX in Internet Appendix H, we run the two-stage least-squares instrumental-variable regressions using a revised pension-knowledge score. In this score, we only use the two questions that directly test knowledge about the pension planner. We find similar coefficients and conclude the treatment letters did not affect pension knowledge. Table AXI shows the same analysis with the pension score as the simple sum of correct answers to all six questions. We again conclude the treatment letters did not affect pension knowledge.

[TABLE VI HERE]

We also use the two-stage least-squares instrumental-variable approach to see whether looking up retirement information affects the decision to save more.[10] Again, the relationship between having looked at the pension planner and our self-reported savings measure, *Saved More,* could be endogenous. We once more use the random-treatment assignment in the field experiment to argue for the satisfaction of the exogeneity condition and that no direct correlation exists between treatment assignment and the likelihood of reporting additional savings. Column (3) shows the second-stage regression. The first-stage regression is the same as for the previous instrumental-variable regression, thus depicted by Column (1). Similar to the results of Column (2), we see that looking at the pension planner has no statistically significant effect on self-reported savings behavior for retirement.

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[10] Because the dependent variables in the first stage and the second stage are binary variables, we also show marginal effects from a recursive simultaneous bivariate probit in Table AXII in Internet Appendix H. The conclusions are the same. We focus on the two-stage least-squares regression in the main text as Angrist and Pischke (2009) argue the two-stage least-squares regression is a more robust estimator.

VIII.   Heterogenous Treatment Effects

Overall, we see financial incentives do not affect pension knowledge or self-reported savings behavior but are effective interventions for increasing interest. Next, we explore whether financial-incentive interventions are more effective for certain subgroups.

A.   Gender

Figure 5 shows the effect of the different treatment groups for women and men separately. In both studies, women were less likely than men to look at the pension planner. Interestingly, Study 1 shows that when we offered a financial incentive, the rates of women and men looking at their pension planner converged (Panel (a)). Also, in Study 2, women and men looked at the pension planner equally often in the financial-incentive treatments. Although women looked more often at the pension planner in the lottery groups with smaller prizes, men did so more often in the *4*€500* and *2*€1,000* lottery groups.

[FIGURE 5 HERE]

To analyze heterogeneity in treatment effects, we run OLS regressions and add interactions between the male dummy and the treatments. Table VII shows the coefficients. In Study 1, the financial-incentive letter had a negative effect on the likelihood of looking at the pension planner for men, but the difference is not statistically significant. In Study 2, men were less receptive than women to the lottery with the smallest prizes (a decrease of 0.9 percentage points). All other differences are nonsignificant.

[Table VII HERE

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B. Age

Figure 6 splits the sample into participants above and below the median age of 36. Panel (a) shows the results from Study 1. On average, younger participants were less likely to look for information on their retirement situation. A financial incentive increased their average rate of looking at the pension planner to a level similar to the rate of the older participants in the control group. Panel (b) presents the results from Study 2. Most people in both age groups reacted to the lottery raffling two packs of vouchers worth €1,000. As with Study 1, the younger participants looked at pension information less than the older participants.

[FIGURE 6 HERE]

We add interactions of continuous age (in steps of 10 years) with the treatment dummies in Table VIII. In Study 1, no heterogenous treatment effect is detectable. For Study 2, the interaction coefficients between age and *4*€500* and age and *2*€1,000* are statistically significant at the 95% significance level, with an extra increase of 0.3 percentage points per additional 10 years.

[TABLE VIII HERE]

C. Income

To analyze the moderating effect of income, we add interactions between the continuous income variable (in €10,000) and the treatment letters. Table IX shows the coefficients. For Study 1, we do not find a statistically significant interaction. For Study 2, we find the *2*€1,000-letter* interacts with income, so that an extra €10,000 in income in that treatment group increased the likelihood of looking at the pension planner by 0.3 percentage points (p<0.05).

[TABLE IX HERE]

Previous studies have found low-income individuals react more strongly to financial incentives (cf. Haisley et al. (2012); John, MacDonald, and Sanders (2015)). Because most of the interactions in our regressions are nonsignificant, we do not find this effect. Within our sample, participants with higher incomes reacted slightly more than low-income individuals to large incentives. This finding suggests the effects of financial incentives are not limited to low-income individuals.

This subsection shows we find little evidence for heterogeneous treatment effects. Financial incentives increased the likelihood of looking at personal-pension information for all studied subgroups. The money spent by the pension fund thus has a positive effect on looking up retirement information for all people in the fund.

IX. Robustness of Our Results

This section examines the robustness of our results with respect to four aspects: spillover effects, frequency of interest in retirement information, shifting planned behavior to the study period, and interaction effects between Study 1 and Study 2.

Financial incentives might create spillover effects (see Banerjee et al. (2017) for a discussion of spillover effects in RCTs). Employees in a branch could have talked about the possibility of receiving a financial reward when logging in, thus leading to a higher number of logins across treatments and to washing out the treatment effects. Three aspects make spillover effects unlikely to explain our findings. First, spillover effects would attenuate the measured treatment effect, because participants in the control group would also have been more likely to visit the pension planner, which would make our documented results rather conservative. Second, participants in

the financial-incentive group had a disincentive to talk about the letter: the more people who logged in, the lower their chances of receiving the VVV gift voucher. Third, we test whether the fraction of participants in the financial-incentive group affects our results. In Table AXIII in Internet Appendix H, we add the fraction of employees who work for the same employer and receive the same financial-incentive treatments as a control. The addition of the fractions does not affect the treatment effects of the financial incentives, nor are five out of six coefficients of the fraction variables statistically significant.[11] Spillover effects therefore do not explain our main results.

More than 90% of participants did not look at the pension planner in either study. To look at whether some participants never looked at the pension planner, we use additional logging data collected after Study 1, covering the period from February 2016 until and including December 2016. Because we do not have monthly administrative data, we need to assume the number of fund members stayed the same throughout the year. Of the fund members in Study 1, we find 5.12% looked at the pension planner at least once in the period between December 22, 2015, and December 31, 2016. In the Study 1 period (December 22, 2015, until February 1, 2016), 2.27% of participants looked at the pension planner at least once, meaning 44% of the participants who looked at the pension planner in the extended year of 2016 at least once did so during the study period. Looking at the rate of people logging in to the pension planner per month (Figure A11), we see that the month in which Study 1 took place is the month in which most participants looked

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[11] *Fraction of 200*€10 letters per employer* is statistically significant at the 10% level (0.97 percentage points).

at their personal retirement information. Our treatments were thus effective in motivating participants to look at the pension planner.

Another concern is that participants shift their planned website visits forward into the treatment period. Gneezy, Meier, and Rey-Biel (2011) describe this decision as a crowding-out effect after incentives have been removed. This effect would mean we do not see an overall increase in looking at information, but rather a shift within the year for the participants in the financial-incentive treatment group. For Study 1, we do have logging data after the study period, but no monthly administrative data. Figure A12 in the Internet Appendix shows the number of clicks per treatment for the period of January 2016 until and including December 2016. We see the increase in website visits of participants who received the financial-incentive letter only in the experimental period. Furthermore, participants in the financial-incentive treatment group were as likely to look at the planner during 2016 as participants who received any other letter. This finding shows the financial-incentive treatment resulted in people looking at the pension planner at a rate that normally would not have taken place in a later period.[12]

A subset of participants in Study 2 were also participants in Study 1. During our study period, the average participant stayed active in the fund for about four to five years, which means an average turnaround in the population of 25%. Consequently, 47% of participants in Study 2 did not participate in Study 1: 120,838 of the 257,433 participants in Study 2 are not in the Study 1 data. This set-up gives us the opportunity to examine whether participants who received the

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[12] The data provider unfortunately did not record website behavior after Study 2. We can therefore not do a similar analysis for the behavior after Study 2.

financial-incentive letter in Study 1, participants who received a different letter in Study 1, and participants who were not a member in Study 1 reacted differently to the letters. Column (2) in Table AXIV in the Appendix shows a linear regression of *Pension Planner* in Study 2 on the treatment letters in Study 2. The regression controls for whether participants were not a fund member in Study 1 and whether they received the financial-incentive letter in Study 1. Participants who received any other letter in Study 1 are the baseline group.

We find that not being a member in Study 1 increased the likelihood of looking at the pension planner in Study 2 by 0.6 percentage points. Receiving the financial-incentive letter in Study 1 did not affect the likelihood of looking up personal information in Study 2. The treatment effects of the financial-incentives letters in Study 2 are the same as when we do not control for participation in Study 1. In Column (3) in Table AXIV, we interact the treatments in Study 2 with the variable indicating whether participants received the financial-incentive letter in Study 1 or whether they were not a member in Study 1. Participants who received any other letter in Study 1 are the baseline group. *Not a member in Study 1* is no longer statistically significant. We find positive effects significant at the 95% confidence level for the interaction between *Not a member in Study 1* and *100*€20* (0.6 percentage points) and the interaction between *Fin. Inc. in Study 1* and *100*€20* (1.3 percentage points). Our main results of Study 2 are thus robust to including controls for prior engagement in Study 1.

X. Conclusion and Discussion

This paper examines what motivates individuals to look at their personal pension plan with pension communication, so that they increase their pension knowledge and make adequate savings decisions. Pension funds spend considerable resources on communication with participants, but such communication has so far been rather ineffective. We conduct two large-scale field experiments. We find peer-information treatments are not effective in increasing the look-up rate of retirement information, but financial incentives are. However, looking at personal-pension information does not increase capability, as measured by a pension-knowledge quiz three weeks after the letters were sent. The interventions also do not increase the likelihood of reporting increased savings within the three weeks after the intervention.

Benartzi et al. (2017) recommend ways for improving behavioral science's power for policymakers. First, they recommend comparing the effect of different interventions on the same population. To our knowledge, our study is the first to compare the effects of different peer information and different financial incentives on savings decisions within the same pension fund population. Second, Benartzi et al. (2017) recommend reporting cost effectiveness. Our results indicate the financial incentive costs between €6.05 and €1.27 per additional person looking at the pension planner. Third, Benartzi et al. (2017) stress that "Tracking failures is as important for knowledge creation as tracking successes" (p.12). We document no effects, or slightly negative effects, of using peer information. This result is in line with that from an overview study on peer information (John et al. (2014)). We also find no effects of financial incentives on pension knowledge or on self-reported savings behavior. Our two-stage instrumental-variable approach for

the analysis on pension knowledge shows correlational studies can be misleading. If we were just using correlations, we would falsely conclude that looking at the pension planner leads to more knowledge. This finding is in line with Fernandes et al. (2014), who conclude that study designs that consider selection into treatment find a smaller effect of financial education on financial behavior than studies that ignore selection.

Why do we find peer information is ineffective and sometimes even backfires? One explanation could be that people do not read the letters carefully, so one sentence was not enough to be treated. We find three arguments against this explanation. First, the one sentence about the financial incentive did have a positive effect, which indicates participants did notice the treatment sentence. Second, some of the peer-information sentences did have a significant effect, but a negative one rather than the expected positive effect. For example, the income-hope treatment significantly decreased the login rate. Third, Bhargava and Manoli (2015), Hallsworth et al. (2017), Choi et al. (2017), Bott et al. (2020) and Goldin et al. (2020) also only add one sentence in the usual text and find the desired effects.

A second explanation for why our peer information treatments were ineffective could be that the particular statements we used are suboptimal. In our peer-information treatments, we referred to "A large part of people in the Netherlands . . ." An advantage of this type of peer information is that we could credibly make our statements in the context of the pension fund, without deceiving pension fund participants. We think it communicating in an honest manner to foster trust in the pension fund is crucial. We chose this type of peer information because a large number of previous studies successfully changed behavior this way (De Groot et al. (2013), Sanders and Smith (2016),

Hallsworth et al. (2017)). For example, Hallsworth et al. (2017) use the phrasing "A great majority of the people in the UK . . ." to increase payment rates for overdue tax. Studies by Wenzel (2004, 2005) show adding the country reference to the peer information in tax letters increases tax compliance. Based on the existing evidence, we therefore expected this type of peer information to be effective in triggering participants to look at their retirement information. However, if participants in our study perceive themselves to be disadvantaged compared with the general Dutch population, a discouragement effect to the one discovered by Beshears et al. (2015) could have arisen.

Our study opens several avenues for future research. First, an important question is whether other types of peer information do work effectively to change behavior in the context of retirement. For example, Johnson et al. (2012) point out that more personalized nudges might increase the power of peer information. Peer information referring to specific characteristics of pension fund participants could be more effective. One could think of peer information relating to the specific employer at which the individual is employed or the neighborhood in which she lives.

Second, our study took place in the Netherlands, the country ranked first in the Mercer CFA Institute Global Pension Index (Mercer (2020)). The need for retirement information might be smaller in the world's best pension system. Moreover, the context of our study is a hybrid defined-benefit pension fund, where the need for retirement information might be lower than in a defined-contribution system. Yet, de Bresser and Knoef (2015) estimate that a third of the Dutch population has a savings gap. Moreover, the planner shows participants what happens to their pension when they retire later or retire part-time, for example. Many participants make use of these options. In

2018, 66.1% of participants chose to move their retirement income to an earlier age than 67, the age at which they would receive full retirement benefits. The planner gives participants insights into the financial consequences of doing so. In addition, people can save for retirement privately, as 26.8% of our participants report doing. The pension planner can help individuals decide whether and how much to save for their retirement privately to complement their pension payments to achieve their desired level of consumption upon retirement.

Third, other approaches to improving pension knowledge and encourage additional savings can be explored. The decision to save is complex, which might explain why we do not find any effects of peer information and financial incentives on self-reported savings behavior. Future research can focus on different avenues for increasing people's savings. Perhaps individuals need more time to decide on additional pension savings than the three weeks we observe. On the other hand, Fernandes et al. (2014) document that the effect of financial education programs fades out rather quickly. This finding suggests individuals either make savings decisions rather quickly or not at all. Furthermore, simply providing individuals with information might not be enough and more intensive financial education could be necessary. Kaiser et al. (2020) find the most positive effects of financial education programs with longer duration. Moreover, using choice architecture to simplify the savings process might be important. Daminato, Filippino, and Haufler (2020) show the availability of a pension app that simplifies the process to directly apply for tax benefits increases tax-favored contributions. Goldin et al. (2020) emphasize that highlighting a specific contribution rate simplifies the savings decision and consequently leads to more savings.

Another interesting avenue for research is to look at the effects of financial incentives that are

related to other stages in the Decision States Model. We provided incentives to look at information. One could also incentivize actual learning in the pension-knowledge quiz or incentivize additional savings. An example for the latter is a lottery bond, in which the coupon rate is lower but bondholders have a chance to win a large amount of money, as long as they hold the bond (Lobe and Hölz (2007), Tufano (2008)). Another example is a prize-linked savings account. When one uses such an account, one automatically enters lotteries for which the number of eligible tickets depends on the account balance. Because incentives are key to economics, further exploring these avenues is fruitful. Moreover, Duflo et al. (2006) show financial incentives do work if a professional advisor is helping individuals make decisions. Future studies can investigate whether a general pattern exists in which incentives work best in combination with financial advice. Examining the effect of lotteries with explicitly stated probabilities and whether offering even larger prizes than ours does increase effectiveness also seems promising.

Fourth, more work is needed to shed light on the welfare implications of financial-information provision and the encouragement of adequate savings decisions. The Mercer CFA Institute Global Pension Index and the European Commission Report on Pension Adequacy show the majority of pension fund participants need to save more for retirement (Mercer (2020), EU (2018)). However, not all participants are at risk of under-saving for retirement, and a subset of participants can expect to even save too much. Moreover, if people were to save more for their retirement, the crowding out of savings from other accounts could arise. These effects can be documented in new field studies. A fundamental question is whether additional savings should be promoted for everyone. This broader discussion is relevant to academics, pension funds, and policymakers. In this light,

our paper focuses on helping people become capable of making adequate savings decisions, by providing them with the right information.

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Tables and Figures

Table I
Mean Statistics: Active Pension Fund Participants

This table shows descriptive statistics for the active participants of the pension fund for the retail sector in Study 1 and Study 2. The pension administrator provided the data on the active pension fund participants for Study 1 in February 2016 and for Study 2 in July 2018. Except for the full-time equivalent (FTE), age, and income, all variables present rates. The variables are defined in Section III.

	Study 1 N=226,946		Study 2 N=257,433	
	Mean	SD	Mean	SD
Male	0.31	0.46	0.34	0.48
Age (in years)	37.44	12.98	37.96	13.11
FTE	0.67	0.29	0.69	0.29
Partner	0.39	0.49	0.39	0.49
Income (in €)	18,358	12,994	22,417	16,254
Provinces				
Noord-Holland	0.18	0.39	0.18	0.39
Flevoland	0.03	0.16	0.03	0.16
Utrecht	0.08	0.27	0.07	0.26
Zuid-Holland	0.20	0.40	0.20	0.40
Gelderland	0.12	0.32	0.11	0.32
Noord-Brabant	0.14	0.35	0.16	0.36
Zeeland	0.02	0.15	0.02	0.15
Limburg	0.07	0.25	0.07	0.25
Overijssel	0.07	0.25	0.07	0.25
Drenthe	0.03	0.17	0.09	0.17
Friesland	0.03	0.18	0.03	0.18
Groningen	0.03	0.17	0.03	0.17

Table II

Comparison of Participants Who Visited the Pension Planner and Answered the Survey, and the Whole Pension Fund Population

This table shows descriptive statistics of the subset of participants who clicked on the pension planner for Studies 1 and 2, of participants who responded to the survey in Study 2, and of participants who did not click on the pension planner for Studies 1 and 2. Except for the full-time equivalent (FTE), age (in years), and income (in €), all variables present rates. The "Diff. Planner" column shows t-statistics of the differences between the characteristics of the participants of the pension fund who clicked on the pension planner and those who did not. The "Diff. Survey" column shows t-statistics of the differences between the characteristics of the participants of the pension fund who answered the survey and those who did not. The province names not fully spelled out are N.-Holl.=Noord-Holland, Z.-Holland=Zuid-Holland, and N.-Brab.= Noord-Brabant. *** p<0.001, ** p<0.01, * p<0.05

	Study 1					Study2							
	Pension Planner (N=5,155)		No Pension Planner (N=221,791)		Diff. Planner	Pension Planner (N=16,650)		No Pension Planner (N=240,783)		Survey (N=2,231)		Diff. Planner	Diff. Survey
	Mean	SD	Mean	SD	t	Mean	SD	Mean	SD	Mean	SD	t	t
Male	0.39	0.49	0.31	0.46	11.96***	0.36	0.48	0.34	0.47	0.37	0.48	5.07***	2.34*
Age	43.53	15.13	37.30	12.89	34.17***	39.52	14.96	37.85	12.97	46.49	13.91	15.90***	30.93***
FTE	0.69	0.29	0.67	0.29	5.09***	0.67	0.30	0.69	0.29	0.71	0.28	-6.82***	3.23**
Partner	0.51	0.50	0.39	0.49	-2.23*	0.43	0.50	0.39	0.49	0.54	0.50	11.41***	14.77***
Income (€)	21,360	15,636	18,288	12,918	16.79***	22,755	17,273	22,393	16,181	25,596	18,351	2.78**	9.28***
Provinces													
N.-Holl.	0.18	0.39	0.18	0.39	-0.48	0.17	0.37	0.18	0.39	0.16	0.37	-5.14***	-2.54*
Flevoland	0.02	0.15	0.03	0.16	-0.84	0.02	0.15	0.03	0.16	0.02	0.14	-1.86	-1.77
Utrecht	0.08	0.28	0.08	0.27	1.76	0.07	0.26	0.07	0.26	0.08	0.27	-0.83	0.44
Z.-Holland	0.18	0.39	0.21	0.40	-4.11***	0.20	0.40	0.20	0.40	0.18	0.38	-0.57	-2.35*
Gelderland	0.12	0.32	0.12	0.32	0.56	0.12	0.32	0.11	0.32	0.13	0.33	1.08	2.04*
N.-Brab.	0.15	0.36	0.14	0.35	1.24	0.17	0.37	0.16	0.36	0.16	0.37	3.20**	0.65
Zeeland	0.02	0.15	0.02	0.15	0.41	0.03	0.16	0.02	0.15	0.03	0.17	1.85	1.65
Limburg	0.07	0.26	0.07	0.25	1.17	0.08	0.27	0.07	0.25	0.08	0.27	4.27***	2.64**
Overijssel	0.07	0.26	0.07	0.25	1.19	0.07	0.25	0.07	0.25	0.07	0.26	-0.03	1.07
Drenthe	0.04	0.19	0.03	0.17	2.73**	0.03	0.17	0.03	0.17	0.03	0.18	0.84	1.74
Friesland	0.03	0.18	0.03	0.18	0.09	0.03	0.17	0.03	0.18	0.03	0.16	-1.74	-1.67
Groningen	0.03	0.16	0.03	0.17	-1.42	0.03	0.17	0.03	0.17	0.03	0.17	0.26	0.22

Table III

Financial Incentives Increase the Likelihood of Looking at Retirement Information (Study 1)

This table shows the coefficients of OLS regressions with different binary dependent variables for Study 1. *Pension Planner* indicates a participant clicked on the pension planner, *More Than 1 Minute* indicates the participant spent more than 1 minute on the pension planner, *More Than 5 Minutes* indicates the participant spent more than 5 minutes on the pension planner, and *More Than 10 Minutes* indicates the participant spent more than 10 minutes on the pension planner. *Income-Fear*, *Income-Hope*, *Saving-Fear*, *Saving-Hope*, and *Financial Incentive* indicate the treatment letter the participant received. The control letter is the baseline. *Male* indicates the gender of the participant; women are the baseline. *Age: 30-39, Age: 40-49, Age: 50-59*, and *Age: 60-66* are levels indicating the participant's age group. Participants aged below 30 are the baseline category. The *Income-Quintile* rows indicate income quintile to which the participant belongs. The first income quintile is the baseline category. *Part-timer* indicates the participants who worked less than a full-time position. Full-timers are the baseline category. *Partner* indicates whether the member had a partner registered with the pension fund. The number of observations is lower in Columns (2) to (4) because we do not have information on time spent on the planner from 1,650 participants. We control for province dummies. Robust standard errors are in parentheses. *** p<0.001, ** p<0.01, * p<0.05

	Pension Planner	More than 1 Minute	More than 5 Minutes	More than 10 Minutes
	(1)	(2)	(3)	(4)
Financial Incentive	0.011***	0.008***	0.001**	0.000
	(0.001)	(0.001)	(0.001)	(0.000)
Peer Information				
Income-Fear	-0.002*	-0.002*	-0.001	-0.000
	(0.001)	(0.001)	(0.000)	(0.000)
Income-Hope	-0.003**	-0.002*	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.000)
Saving-Fear	-0.003**	-0.003***	-0.000	-0.000
	(0.001)	(0.001)	(0.000)	(0.000)
Saving-Hope	-0.001	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.000)
Male	0.007***	0.005***	0.002***	0.001**
	(0.001)	(0.001)	(0.000)	(0.000)
Age :30-39	-0.006***	-0.004***	-0.001***	-0.001***
	(0.001)	(0.001)	(0.000)	(0.000)
Age: 40-49	-0.003**	-0.000	0.000	-0.000
	(0.001)	(0.001)	(0.000)	(0.000)
Age: 50-59	0.015***	0.012***	0.008***	0.003***
	(0.001)	(0.001)	(0.001)	(0.000)
Age: 60-66	0.064***	0.048***	0.035***	0.021***
	(0.003)	(0.002)	(0.002)	(0.001)
Income: 2nd Quintile	0.000	0.000	0.001**	0.000
	(0.001)	(0.001)	(0.000)	(0.000)
Income: 3rd Quintile	0.001	0.000	0.001**	0.001*
	(0.001)	(0.001)	(0.000)	(0.000)
Income: 4th Quintile	0.002	0.002	0.002***	0.001***
	(0.001)	(0.001)	(0.000)	(0.000)
Income: Highest Quintile	0.014***	0.011***	0.007***	0.004***
	(0.001)	(0.001)	(0.001)	(0.000)
Part-timer	0.006***	0.004***	0.002***	0.001***
	(0.001)	(0.001)	(0.001)	(0.000)
Partner	0.004***	0.003***	0.002***	0.001**
	(0.001)	(0.001)	(0.000)	(0.000)
Constant	0.006***	0.002	-0.004***	-0.002***
	(0.002)	(0.001)	(0.001)	(0.001)
Observations	226,946	225,296	225,296	225,296
Adj. R-Squared	0.013	0.010	0.014	0.011
Province Dummies	YES	YES	YES	YES

Table IV
Larger and Fewer Financial Incentives Work Better than Smaller and Many Incentives (Study 2)

This table shows the coefficients of OLS regressions with different binary dependent variables for Study 2. *Pension Planner* indicates a participant clicked on the pension planner, *More Than 1 Minute* indicates the participant spent more than 1 minute on the pension planner, *More Than 5 Minutes* indicates the participant spent more than 5 minutes on the pension planner, and *More Than 10 Minutes* indicates the participant spent more than 10 minutes on the pension planner. *200*€10, 100*€20*, *100*€10+€1,000*, *4*€500*, and *2*€1,000* indicate which letter a participant received. The control letter is the baseline. *Male* indicates the gender of the participant; women are the baseline. *Age: 30-39*, *Age: 40-49*, *Age: 50-59*, and *Age: 60-66* are levels indicating participant's age group. Participants aged below 30 are the baseline category. The *Income-Quintile* rows indicate the income quintile to which the participant belongs. The first income quintile is the baseline category. *Part-timer* indicates the participants who worked less than full time. Full-timers are the baseline category. *Partner* indicates whether the member had a partner registered with the pension fund. We control for province dummies. The number of observations is lower in Columns (2) to (4) because we do not have information on time spent on the planner from 4,461 participants. Robust standard errors are in parentheses. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

	Pension Planner (1)	More than 1 Minute (2)	More than 5 Minutes (3)	More than 10 Minutes (4)
200*€10	0.015***	0.008***	0.001*	0.000
	(0.001)	(0.001)	(0.001)	(0.000)
100*€20	0.021***	0.010***	0.002***	0.000
	(0.002)	(0.001)	(0.001)	(0.000)
100*€10+€1,000	0.024***	0.012***	0.003***	0.001**
	(0.002)	(0.001)	(0.001)	(0.000)
4*€500	0.035***	0.017***	0.004***	0.001***
	(0.002)	(0.001)	(0.001)	(0.000)
2*€1,000	0.037***	0.018***	0.004***	0.001***
	(0.002)	(0.001)	(0.001)	(0.000)
Male	0.006***	0.003***	0.001***	0.001**
	(0.001)	(0.001)	(0.000)	(0.000)
Age: 30-39	-0.019***	-0.004***	0.000	-0.000*
	(0.001)	(0.001)	(0.000)	(0.000)
Age: 40-49	-0.021***	0.000	0.002***	0.001**
	(0.001)	(0.001)	(0.000)	(0.000)
Age: 50-59	0.005***	0.016***	0.010***	0.004***
	(0.002)	(0.001)	(0.001)	(0.000)
Age: 60-66	0.069***	0.061***	0.038***	0.018***
	(0.003)	(0.003)	(0.002)	(0.001)
Income: 2nd Quintile	-0.006***	-0.001	0.001	0.001*
	(0.002)	(0.001)	(0.001)	(0.000)
Income: 3rd Quintile	-0.009***	-0.000	0.002***	0.001**
	(0.002)	(0.001)	(0.001)	(0.000)
Income: 4th Quintile	-0.007***	0.000	0.002***	0.001**
	(0.002)	(0.001)	(0.001)	(0.000)
Income: Highest Quintile	0.004*	0.005***	0.004***	0.002***
	(0.002)	(0.001)	(0.001)	(0.000)
Part-timer	0.007***	0.002*	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.000)
Partner	0.009***	0.007***	0.002***	0.001**
	(0.001)	(0.001)	(0.000)	(0.000)
Constant	0.034***	0.004**	-0.003***	-0.002***
	(0.002)	(0.002)	(0.001)	(0.000)
Observations	257,433	252,972	252,972	252,972
Adj. R-Squared	0.010	0.010	0.012	0.007
Province Dummies	YES	YES	YES	YES

Table V
Statistics on Pension-Knowledge Quiz: Overall and per Treatment (Study 2)

This table shows descriptive statistics of how many participants answered the six quiz questions correctly or "don't know" per treatment group. All variables present rates. The "Difference" column shows the F-statistics of the differences between the characteristics of the participants between treatment groups. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

	Overall (N=2,231)		Baseline (N=334)		200*€10 (N=392)		100*€20 (N=383)		100*€10+€1,000 (N=360)		4*€500 (N=410)		2*€1,000 (N=352)		Difference Treatments
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F-statistic
Age Influences Pension Level															
Correct	0.41	0.49	0.38	0.49	0.43	0.50	0.40	0.49	0.42	0.49	0.44	0.50	0.40	0.49	0.54
Incorrect	0.13	0.34	0.13	0.34	0.15	0.36	0.11	0.32	0.14	0.35	0.12	0.33	0.14	0.35	0.67
Don't Know	0.45	0.50	0.48	0.50	0.42	0.49	0.49	0.50	0.44	0.50	0.44	0.50	0.46	0.50	1.01
Change Investment Portfolio															
Correct	0.19	0.39	0.19	0.39	0.18	0.38	0.18	0.39	0.20	0.40	0.22	0.41	0.18	0.38	0.61
Incorrect	0.08	0.27	0.08	0.26	0.07	0.26	0.04	0.21	0.08	0.27	0.10	0.29	0.12	0.32	2.90*
Don't Know	0.73	0.44	0.74	0.44	0.75	0.43	0.78	0.420	0.72	0.45	0.69	0.46	0.71	0.46	1.95
Paying Contribution															
Correct	0.73	0.44	0.75	0.44	0.72	0.45	0.72	0.45	0.76	0.43	0.73	0.44	0.70	0.46	0.91
Incorrect	0.13	0.34	0.13	0.33	0.14	0.34	0.14	0.35	0.12	0.33	0.14	0.35	0.14	0.34	0.25
Don't Know	0.13	0.34	0.13	0.33	0.14	0.35	0.14	0.34	0.12	0.32	0.12	0.33	0.17	0.37	0.89
Indexation															
Correct	0.48	0.50	0.47	0.50	0.50	0.50	0.46	0.50	0.48	0.50	0.48	0.50	0.50	0.50	0.41
Incorrect	0.06	0.24	0.06	0.24	0.06	0.24	0.07	0.25	0.07	0.26	0.06	0.24	0.04	0.20	0.54
Don't Know	0.46	0.50	0.47	0.50	0.44	0.50	0.48	0.50	0.45	0.50	0.45	0.50	0.46	0.50	0.28
Taking Pension to Other PF															
Correct	0.66	0.47	0.67	0.47	0.66	0.48	0.65	0.48	0.69	0.46	0.67	0.47	0.65	0.48	0.43
Incorrect	0.05	0.21	0.05	0.21	0.06	0.24	0.03	0.17	0.05	0.21	0.04	0.20	0.05	0.22	1.03
Don't Know	0.29	0.45	0.29	0.46	0.28	0.45	0.32	0.47	0.26	0.44	0.29	0.45	0.30	0.46	0.69
High-Low Construction															
Correct	0.37	0.48	0.36	0.48	0.40	0.49	0.35	0.48	0.39	0.49	0.35	0.48	0.35	0.48	0.69
Incorrect	0.10	0.30	0.10	0.30	0.09	0.29	0.11	0.32	0.10	0.30	0.10	0.29	0.11	0.31	0.28
Don't Know	0.53	0.50	0.54	0.50	0.51	0.50	0.54	0.50	0.52	0.50	0.55	0.50	0.54	0.50	0.45

Table VI
Instrumental Variable Regression: Pension Knowledge and Self-Reported Savings Behavior
(Study 2)

This table shows coefficients of two different two-stage least-squares instrumental-variable regressions. The first stage for both regressions is the same and has the dependent variable *Pension Planner*, indicating whether the participant looked at the pension planner. *Pension Planner* is instrumented by the treatment letters: *200*€10*, *100*€20*, *100*€10+€1,000*, *4*€500*, and *2*€1,000*. The second stage is a regression on either *Pension Knowledge*, measured by a pension-quiz score of six questions, or *Saved More*, equal to 1 if the participant has saved more in the three weeks before the survey, and 0 otherwise. *Male* indicates the gender of the participant; women are the baseline. *Age: 30-39*, *Age: 40-49*, *Age: 50-59*, and *Age: 60-66* are levels indicating the participant's age group. Participants aged below 30 are the baseline category. The *Income-Quintile* rows indicate the income quintile to which the participant belongs. *Part-timer* indicates the participants who worked less than a full-time position. Full-timers are the baseline category. *Partner* indicates whether the member had a partner registered with the pension fund. We control for province dummies. Robust standard errors are in parentheses. *** p<0.001, ** p<0.01, * p<0.05

	Pension Planner (1)	Pension Knowledge (2)	Saved More (3)
Pension Planner		0.168	-0.053
		(0.628)	(0.063)
200*€10	0.100**		
	(0.033)		
100*€20	0.148***		
	(0.034)		
100*€10+€1,000	0.144***		
	(0.035)		
4*€500	0.200***		
	(0.034)		
2*€1,000	0.172***		
	(0.035)		
Male	0.027	0.125	0.012
	(0.024)	(0.089)	(0.010)
Age: 30-39	-0.135***	0.276	-0.016
	(0.038)	(0.156)	(0.017)
Age: 40-49	-0.186***	0.608**	-0.022
	(0.037)	(0.175)	(0.020)
Age: 50-59	-0.176***	1.149***	-0.030
	(0.034)	(0.165)	(0.017)
Age: 60-66	-0.146***	1.776***	-0.010
	(0.037)	(0.166)	(0.019)
Income: 2nd Quintile	-0.032	0.196	0.004
	(0.038)	(0.137)	(0.014)
Income: 3rd Quintile	-0.013	0.085	0.013
	(0.039)	(0.140)	(0.015)
Income: 4th Quintile	-0.034	0.202	0.008
	(0.039)	(0.146)	(0.015)
Income: Highest Quintile	-0.001	0.592***	0.024
	(0.039)	(0.143)	(0.016)
Part-timer	0.028	0.030	0.018
	(0.029)	(0.109)	(0.012)
Partner	0.024	0.051	0.000
	(0.023)	(0.088)	(0.009)
Constant	0.269***	0.983**	0.034
	(0.055)	(0.308)	(0.030)
Observations	2,231	2,231	2,231
Province Dummies	YES	YES	YES

Table VII
Men React Less than Women to Smaller Financial Incentives (Study 1 and Study 2)

This table shows the OLS regressions with the dependent variable *Pension Planner* (binary variable), for Study 1 and Study 2. *Financial incentive in Study 1*, *200*€10*, *100*€20*, *100*€10+€1,000*, *4*€500*, and *2*€1,000* indicate which letter a participant received. Participants who received the control letter are in the baseline category. We control for the covariates from Table IV. In Columns (1) and (2) we control for the peer-information treatment letters. In Column (2) we control for the interactions between *Male* and the social norms/comparison treatment letters. Robust standard errors are in parentheses. *** p<0.001, ** p<0.01, * p<0.05

	Pension Planner (Study 1)		Pension Planner (Study 2)	
	(1)	(2)	(3)	(4)
Financial Incentive in Study 1	0.011***	0.012***		
	(0.001)	(0.001)		
Male x Financial Incentive in Study 1		-0.003		
		(0.003)		
Male	0.007***	0.009***	0.006***	0.009***
	(0.001)	(0.002)	(0.001)	(0.002)
Financial Incentives in Study 2				
200*€10			0.015***	0.018***
			(0.001)	(0.002)
100*€20			0.021***	0.023***
			(0.002)	(0.002)
100*€10+€1,000			0.024***	0.026***
			(0.002)	(0.002)
4*€500			0.035***	0.035***
			(0.002)	(0.002)
2*€1,000			0.037***	0.036***
			(0.002)	(0.002)
Male x 200*€10				-0.009**
				(0.003)
Male x 100*€20				-0.005
				(0.003)
Male x 100*€10+€1,000				-0.004
				(0.003)
Male x 4*€500				-0.001
				(0.003)
Male x 2*€1,000				0.002
				(0.003)
Constant	0.006***	-0.000	0.025***	0.033***
	(0.002)	(0.002)	(0.0022)	(0.002)
Observations	226,946	226,946	257,433	257,433
Adj. R-squared	0.013	0.014	0.010	0.010
Other Covariates	YES	YES	YES	YES
Other Treatments	YES	YES		
Other Interactions		YES		

Table VIII

Table VIII
Older Participants React Slightly More to (Larger) Incentives than Younger Participants
(Study 1 and Study 2)

This table shows the OLS regressions with the dependent variable *Pension Planner* (binary variable). *Financial incentive in Study 1*, *200*€10*, *100*€20*, *100*€10+€1,000*, *4*€500*, and *2*€1,000* indicate which letter a participant received. The control letter is the baseline. We now use *Age (in steps of 10 years)* instead of the age categories. We control for the covariates from Table IV. In Columns (1) and (2), we control for the peer-information treatment letters. In Column (2), we control for the interactions between *Age (in steps of 10 years)* and the peer-information treatment letters. Robust standard errors are in parentheses. *** p<0.001, ** p<0.01, * p<0.05

	Pension Planner (Study 1)		Pension Planner (Study 2)	
	(1)	(2)	(3)	(4)
Financial Incentive in Study 1	0.011***	0.003		
	(0.001)	(0.004)		
Age x Financial incentive in Study 1		0.002		
		(0.001)		
Age (in steps of 10 years)	0.008***	0.009***	0.006***	0.004***
	(0.000)	(0.001)	(0.000)	(0.001)
Financial Incentives in Study 2				
200*€10			0.015***	0.010*
			(0.001)	(0.005)
100*€20			0.021***	0.013**
			(0.002)	(0.005)
100*€10+€1,000			0.024***	0.015**
			(0.002)	(0.005)
4*€500			0.035***	0.023***
			(0.002)	(0.005)
2*€1,000			0.037***	0.026***
			(0.002)	(0.005)
Age x 200*€10				0.001
				(0.001)
Age x 100*€20				0.002
				(0.001)
Age x 100*€10+€1,000				0.002
				(0.001)
Age x 4*€500				0.003*
				(0.001)
Age x 2*€1,000				0.003*
				(0.001)
Constant	-0.014***	-0.017***	0.017***	0.025***
	(0.002)	(0.003)	(0.003)	(0.004)
Observations	226,946	226,946	257,433	257,433
Adj. R-squared	0.008	0.008	0.005	0.005
Other Covariates	YES	YES	YES	YES
Other Treatments	YES	YES		
Other Interactions		YES		

Table IX
High-Income Participants React Slightly More to Large Incentives (Study 1 and Study 2)
This table shows the OLS regressions with the dependent variable *Pension Planner* (binary variable). *Financial incentive in Study 1*, *200*€10*, *100*€20*, *100*€10+€1,000*, *4*€500*, and *2*€1,000* indicate which letter a participant received. The control letter is the baseline. The interactions between income (in €10,000) and the treatment letters are indicated in rows 13–23. We control for the covariates from Table IV. In Columns (1) and (2), we control for the peer-information treatment letters. In Column (2), we control for the interactions between *Age* and the peer-information treatment letters. Robust standard errors are in parentheses. p<0.001, ** p<0.01, * p<0.05

	Pension Planner (Study 1)		Pension Planner (Study 2)	
	(1)	(2)	(3)	(4)
Financial Incentive in Study 1	0.011***	0.009***		
	(0.001)	(0.002)		
Income x Financial Incentive in Study 1		0.001		
		(0.001)		
Income	0.005***	0.005***	0.002***	0.002*
	(0.000)	(0.001)	(0.000)	(0.001)
Financial Incentives in Study 2				
200*€10			0.015***	0.014***
			(0.001)	(0.003)
100*€20			0.021***	0.021***
			(0.002)	(0.003)
100*€10+€1,000			0.024***	0.024***
			(0.002)	(0.003)
4*€500			0.035***	0.033***
			(0.002)	(0.003)
2*€1,000			0.037***	0.030***
			(0.002)	(0.003)
Income x 200*€10				0.001
				(0.001)
Income x 100*€20				-0.000
				(0.001)
Income x 100*€10+€1,000				0.000
				(0.001)
Income x 4*€500				0.001
				(0.001)
Income x 2*€1,000				0.003*
				(0.001)
Constant	0.000	-0.000	0.025***	0.027***
	(0.002)	(0.002)	(0.002)	(0.003)
Observations	226,946	226,946	257,433	257,433
R-squared	0.014	0.014	0.010	0.010
Other Covariates	YES	YES	YES	YES
Other Treatments	YES	YES		
Other Interactions		YES		

Figures
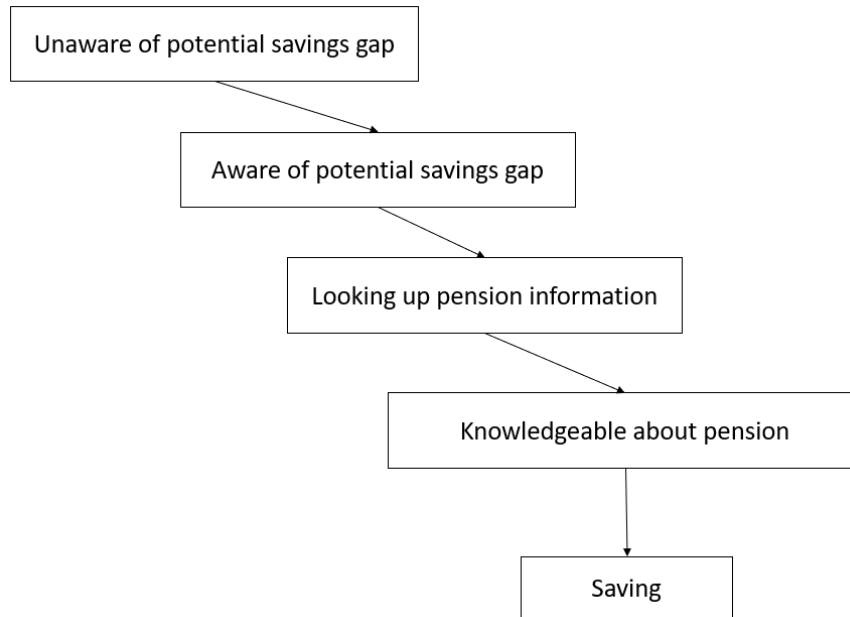
Figure 1. The visualization of the Decision States Model. Figure adapted from Bateman et al. (2014), p.71.
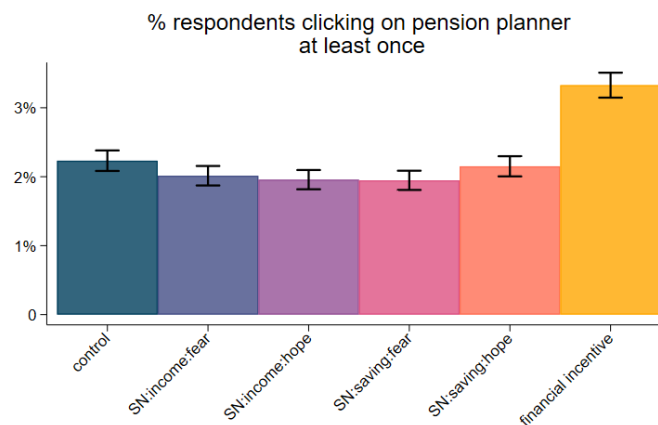
Figure 2. Percentage of respondents who visited their personal pension planner (per letter) in Study 1. The error bars represent the 95% confidence intervals. Table AIV in Internet Appendix E shows the mean differences and multiplicity-adjusted p-values for the mean differences.[13]

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[13] We use the bootstrap-based procedure proposed by List, Shaikh, and Xu (2019) to adjust for testing multiple null hypotheses simultaneously using experimental data with random treatment assignment. For more detail, see List,

% respondents clicking on pension planner at least once
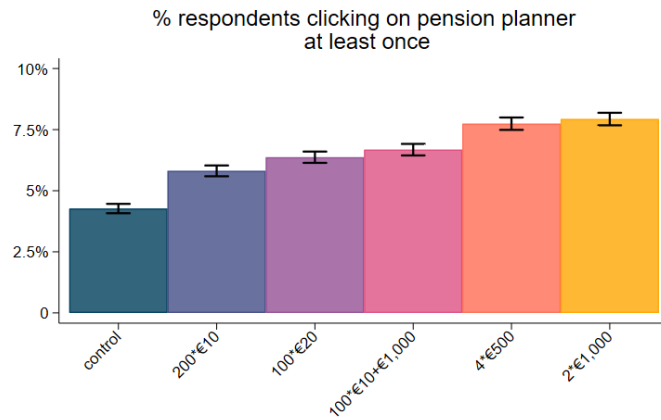
Figure 3. Percentage of respondents who visited their personal pension planner (per letter) in Study 2. The error bars represent the 95% confidence intervals. Table AV in Internet Appendix E shows the mean differences and p-values for the differences.
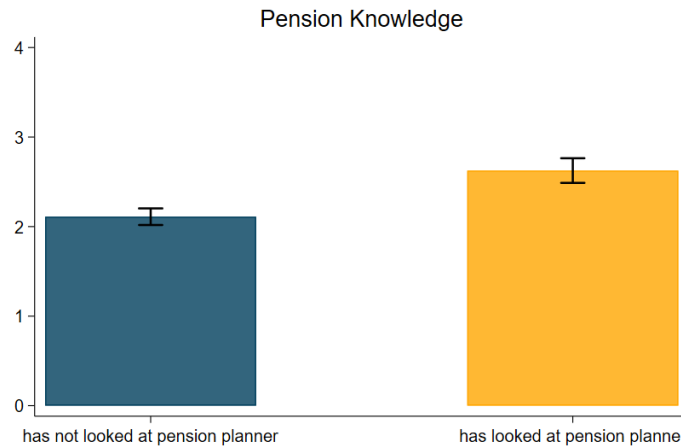
Pension Knowledge

Figure 4. Pension knowledge by whether participants looked at the pension planner (Study 2). The quiz questions can be found in Internet Appendix D. The error bars represent the 95% confidence intervals.

Shaikh, and Xu (2019). Results for both experiments and all subgroups can be found in Internet Appendix E.

(a)   (b)
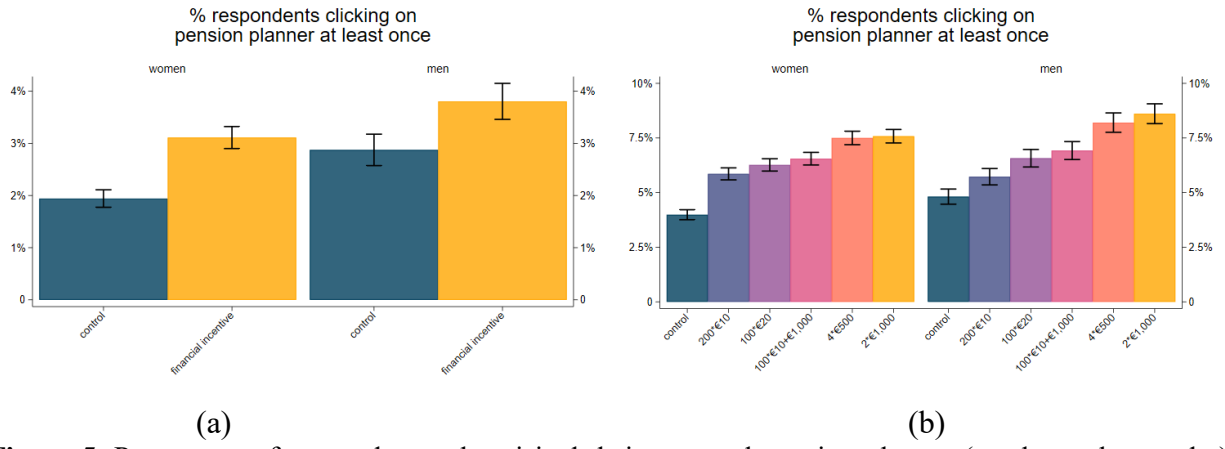
Figure 5. Percentage of respondents who visited their personal pension planner (per letter, by gender). Panel (a) shows the results of Study 1, and Panel (b) shows the results of Study 2. The samples are split by gender. The error bars represent the 95% confidence intervals. Table AVI in Internet Appendix E shows the mean differences and p-values for the differences.
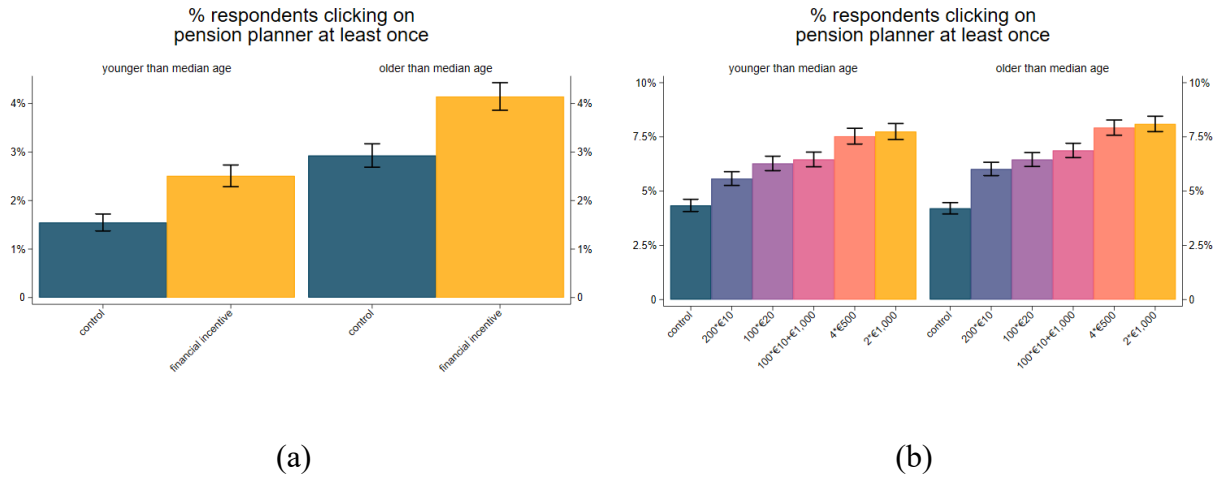
Figure 6. Percentage of respondents who visited their personal pension planner (per letter, by median age). Panel (a) shows the results of Study 1, and Panel (b) shows the results of Study 2. The samples are split by the median age (36 years). The error bars represent the 95% confidence intervals. Table AVII in Internet Appendix E shows the mean differences and p-values for the differences.

<u>**Internet Appendix**</u>

Appendix A. Summary Statistics

Table AI
Summary Statistics per Treatment, Study 1

This table shows descriptive statistics for the active participants of the pension fund for the retail sector per treatment group for Study 1. Except for the full-time equivalent (FTE), age (in years), and income (in €), all variables present rates. The "Difference" column shows the F-statistics of the differences between the characteristics of the participants between treatment groups. The province names not fully spelled out are N.-Holl.=Noord-Holland, Z.-Holland =Zuid-Holland, and N.-Brabant= Noord-Brabant. *** $p<0.001$, ** $p<0.01$, * $p<0.5$

	Baseline (N=37,855)		Income: Fear (N=37,993)		Income: Hope (N=37,806)		Saving: Fear (N=37,748)		Saving: Hope (N=37,798)		Fin. Incentive (N=37,806)		Difference
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F-statistic
Male	0.31	0.46	0.31	0.46	0.31	0.46	0.31	0.46	0.31	0.46	0.31	0.46	0.35
Age (yrs.)	37.42	12.96	37.34	12.91	37.44	12.98	37.50	12.96	37.46	13.04	37.51	13.00	0.89
FTE	0.67	0.29	0.67	0.29	0.67	0.29	0.67	0.29	0.67	0.29	0.67	0.29	1.11
Partner	0.39	0.49	0.39	0.49	0.40	0.49	0.40	0.49	0.39	0.49	0.40	0.49	0.76
Income (€)	18,433	13,021	18,343	12,951	18,331	12,975	18,340	13,031	18,320	13,018	18,379	12,971	0.39
Provinces													
N.-Holl.	0.18	0.39	0.18	0.39	0.19	0.39	0.18	0.39	0.18	0.39	0.19	0.39	0.06
Flevoland	0.03	0.16	0.03	0.16	0.03	0.16	0.03	0.16	0.03	0.16	0.03	0.16	0.02
Utrecht	0.08	0.27	0.08	0.27	0.08	0.27	0.08	0.27	0.08	0.27	0.08	0.27	0.06
Z.-Holland	0.20	0.40	0.21	0.40	0.20	0.40	0.20	0.40	0.20	0.40	0.20	0.40	0.05
Gelderland	0.12	0.32	0.12	0.32	0.12	0.32	0.12	0.32	0.12	0.32	0.12	0.32	0.04
N.-Brabant	0.14	0.35	0.14	0.35	0.14	0.35	0.14	0.35	0.14	0.35	0.14	0.35	0.09
Zeeland	0.02	0.15	0.02	0.15	0.02	0.15	0.02	0.15	0.02	0.15	0.02	0.15	0.06
Limburg	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.03
Overijssel	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.01
Drenthe	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.17	0.03
Friesland	0.03	0.18	0.03	0.18	0.03	0.18	0.03	0.18	0.03	0.18	0.03	0.18	0.04
Groningen	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.17	0.16

Table AII

Summary Statistics perTreatment, Study 2

This table shows descriptive statistics for the active participants of the pension fund for the retail sector per treatment group for Study 2. Except for the full-time equivalent (FTE), age, and income, all variables present rates. The "Difference" column shows the F-statistics of the differences between the characteristics of the participants between treatment groups. The province names not fully spelled out are N.-Holl.=Noord-Holland, Z.-Holland =Zuid-Holland, and N.-Brab.= Noord-Brabant. *** p<0.001, ** p<0.01, * p<0.5

	Baseline (N=42,900)		200*€10 (N=42,896)		100*€20 (N=42,917)		100*€10+€1,000 (N=42,953)		4*€500 (N=42,881)		2*€1,000 (N=42,886)		Difference
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F-statistic
Male	0.34	0.48	0.35	0.48	0.34	0.47	0.34	0.48	0.34	0.48	0.34	0.48	0.63
Age (yrs.)	37.92	13.06	37.98	13.14	37.93	13.15	37.90	13.06	38.05	13.15	37.97	13.10	0.69
FTE	0.69	0.29	0.69	0.29	0.69	0.29	0.69	0.29	0.68	0.29	0.69	0.29	0.22
Partner	0.39	0.49	0.39	0.49	0.39	0.49	0.39	0.49	0.39	0.49	0.39	0.49	0.32
Income (€)	22,413	16,270	22,452	16,261	22,386	16,206	22,469	16,324	22,388	16,247	22,393	16,218	0.21
Provinces													
N.-Holl.	0.18	0.38	0.18	0.39	0.18	0.39	0.18	0.39	0.19	0.39	0.18	0.38	1.24
Flevoland	0.03	0.16	0.03	0.16	0.03	0.16	0.03	0.16	0.03	0.16	0.03	0.16	0.47
Utrecht	0.07	0.26	0.07	0.26	0.07	0.26	0.07	0.26	0.07	0.26	0.07	0.26	0.16
Z.-Holland	0.20	0.40	0.20	0.40	0.20	0.40	0.20	0.40	0.20	0.40	0.20	0.40	0.98
Gelderland	0.11	0.32	0.11	0.32	0.12	0.32	0.11	0.316	0.12	0.32	0.11	0.32	0.43
N.-Brab.	0.16	0.36	0.16	0.36	0.16	0.36	0.16	0.37	0.16	0.36	0.16	0.37	1.37
Zeeland	0.02	0.15	0.02	0.15	0.03	0.15	0.02	0.15	0.02	0.15	0.02	0.15	0.18
Limburg	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	1.05
Overijssel	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	0.07	0.25	1.22
Drenthe	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.16	0.03	0.16	0.03	0.16	2.47*
Friesland	0.03	0.18	0.03	0.18	0.03	0.18	0.03	0.18	0.03	0.18	0.04	0.19	1.44
Groningen	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.17	0.03	0.17	1.92

Table AIII
Website Behavior in Study 1 and Study 2

This table shows data on website behavior. Panel A shows the fraction of participants who, conditional on having logged in to MyEnvironment, clicked on different sites within MyEnvironment. My Request was not an available site in Study 1, and no Survey was available in Study 2. Panel B shows summary statistics on the total time spent on the pension planner, conditional on having spent time on the pension planner.

	Panel A	
	Study 1: 7,092 logged in	Study 2: 54,747 logged in
	Mean	Mean
Conditional on Having Logged In, Fraction of Participants Clicking On:		
Pension Planner	0.73	0.30
My Request	NA	0.17
My Profile	0.67	0.35
My Mail	0.75	0.93
Logout	0.52	0.36
Survey (Study 1)	0.21	NA

	Panel B			
	Study 1: 3,505 tracked		Study 2: 50,286 tracked	
	Mean	SD	Mean	SD
Conditional on Having Looked at the Pension Planner:				
Total Time on Pension Planner	5.51	8.81	2.72	3.77

Appendix B. The Letters

B1. The Baseline Letter: Studies 1 and 2

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

On www.pensioenfondsdetailhandel.nl you check- in less than a minute - what you will be able to spend soon.

This is how you do it:

- Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;

- Log in with your personal ID number;

- Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

    "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,
Best wishes,
Henk van der Kolk
President of the Pensioenfonds Detailhandel

B2. The Income-Fear Letter: Study 1

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

A large part of people in the Netherlands think that they will have <u>a too low income</u> to retain their current level of consumption in retirement. What about you?

On <u>www.pensioenfondsdetailhandel.nl</u> you check- in less than a minute - what you will be able to spend soon.

This is how you do it:
- Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;
- Log in with your personal ID number;
- Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

   "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,
Best wishes,
Henk van der Kolk
President of the Pensioenfonds Detailhandel

B3. The Income-Hope Letter: Study 1

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

A large part of people in the Netherlands think that they will have <u>enough income</u> to retain their current level of consumption in retirement. What about you?

On <u>www.pensioenfondsdetailhandel.nl</u> you check- in less than a minute - what you will be able to spend soon.

This is how you do it:

      - Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;

      - Log in with your personal ID number;

      - Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

    "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,

Best wishes,

Henk van der Kolk

President of the Pensioenfonds Detailhandel

B4. The Savings-Fear Letter: Study 1

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

A large part of people in the Netherlands think they <u>save too little</u> to retain their current level of consumption in retirement. What about you?

On www.pensioenfondsdetailhandel.nl you check- in less than a minute - what you will be able to spend soon.

This is how you do it:

 - Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;
 - Log in with your personal ID number;
 - Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

  "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your data personal situation?

Thanks in advance,
Best wishes,
Henk van der Kolk
President of the Pensioenfonds Detailhandel

B5. The Savings-Hope Letter: Study 1

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

A large part of people in the Netherlands think that they will <u>save enough</u> to retain their current level of consumption in retirement. What about you?

On <u>www.pensioenfondsdetailhandel.nl</u> you check- in less than a minute - what you will be able to spend soon.

This is how you do it:
- Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;
- Log in with your personal ID number;
- Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

   "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,

Best wishes,

Henk van der Kolk

President of the Pensioenfonds Detailhandel

B6. The Financial Incentive Letter: Study 1

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

On www.pensioenfondsdetailhandel.nl you check- in less than a minute - what you will be able to spend soon.

Among all participants who log in, we are raffling 100 VVV gift vouchers worth €25.

This is how you do it:

      - Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;

      - Log in with your personal ID number;

      - Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

   "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,

Best wishes,

Henk van der Kolk

President of the Pensioenfonds Detailhandel

B7. 200*€10: Study 2

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

On www.pensioenfondsdetailhandel.nl you check- in less than a minute - what you will be able to spend soon.

Among all participants who log in, we are raffling 200 VVV gift vouchers worth €10.

This is how you do it:

       - Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;

       - Log in with your personal ID number;

       - Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

   "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,

Best wishes,

Henk van der Kolk

President of the Pensioenfonds Detailhandel

B8. 100*€20: Study 2

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

On www.pensioenfondsdetailhandel.nl you check- in less than a minute - what you will be able to spend soon.

Among all participants who log in, we are raffling 100 VVV gift vouchers worth €20.

This is how you do it:

      - Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;

      - Log in with your personal ID number;

      - Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

   "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,

Best wishes,

Henk van der Kolk

President of the Pensioenfonds Detailhandel

B9. 100*€10+€1,000: Study 2

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

On www.pensioenfondsdetailhandel.nl you check- in less than a minute - what you will be able to spend soon.

Among all participants who log in, we are raffling 100 VVV gift vouchers worth €10 and one VVV gift voucher worth €1,000.

This is how you do it:

      - Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;

      - Log in with your personal ID number;

      - Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

   "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,

Best wishes,

Henk van der Kolk

President of the Pensioenfonds Detailhandel

B10. 4*€500: Study 2

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

On www.pensioenfondsdetailhandel.nl you check- in less than a minute - what you will be able to spend soon.

Among all participants who log in, we are raffling 4 VVV gift vouchers worth €500.

This is how you do it:

       - Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;

       - Log in with your personal ID number;

       - Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

   "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,

Best wishes,

Henk van der Kolk

President of the Pensioenfonds Detailhandel

B11. 2€1,000: Study 2*

Dear participant,

Have you ever thought about your future income? Your pension? The money which you will receive monthly from age 67 onwards?

On www.pensioenfondsdetailhandel.nl you check- in less than a minute - what you will be able to spend soon.

Among all participants who log in, we are raffling 2 VVV gift vouchers worth €1,000.

This is how you do it:

     - Go to "Mijn Omgeving" on pensioenfondsdetailhandel.nl;

     - Log in with your personal ID number;

     - Look at your personal pension accrual and pension planner.

With this new insight you can decide whether you want to set aside additional money or whether you want to keep on accruing your pension at your current rate.

   "Mijn Omgeving" also has a helpful tool to see what it means for your pension if you change your job, start living together, get married or divorced... Topics you also find back in the Jij&Wij Magazine, the journal you receive with this letter.

May we ask you to check your personal situation?

Thanks in advance,

Best wishes,

Henk van der Kolk

President of the Pensioenfonds Detailhandel
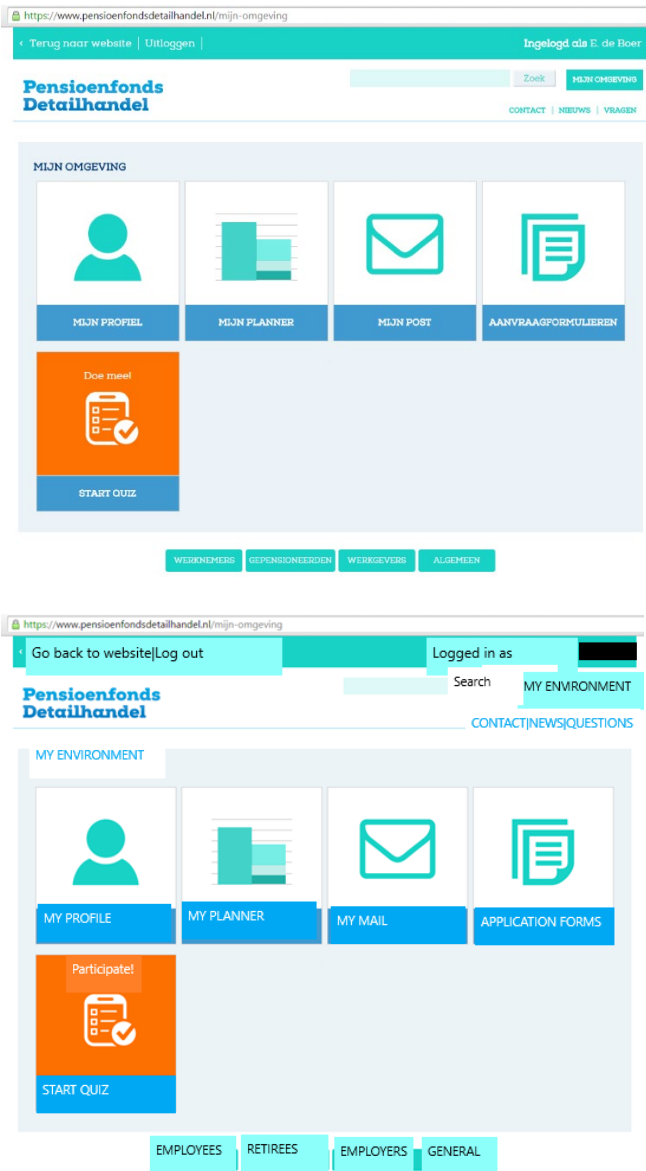
Appendix C. Screenshots of the Website

Figure A1. Screenshot of the first page the participant sees when she logs in to "My Environment," plus translations.

Welkom op de pensioenplanner

Beste heer Testdeelnemer,

Welkom op de pensioenplanner van Pensioenfonds Detailhandel. Met de pensioenplanner krijg je een duidelijk beeld van jouw pensioen. De planner helpt jou ook bij de keuzes die je kunt maken. Wil je bijvoorbeeld een paar maanden eerder met pensioen? Dan kun je zien hoe jouw pensioen verandert.

Hoe werkt de pensioenplanner?
Heel eenvoudig. De planner bestaat uit vier stappen:
1. Je ziet je huidige pensioensituatie.
2. Je geeft aan welke keuzemogelijkheden je wilt laten berekenen.
3. Je vult eventueel aanvullende informatie in.
4. Je ziet de uitkomsten.

Input voor de planner
Disclaimer

Stap 1 : Wat is mijn huidige situatie? >>

Versie: 15.0.7

Welcome to the pension planner

Dear Mr. Test Participant,

Welcome to the pension planner of Pensioenfonds Detailhandel. With the pension planner you will get a clear picture of your pension. The planner also helps you with the choices you can make. Would you like to retire a few months earlier for example? Then you can see how your pension will change.

How does the pension planner work?

Very easy. The planner consists out of four steps:

1. You will see your current pension situation.

2. You will select which choice opportunities you would like to have calculated.

3. If necessary, you will fill in additional details.

4. You will see the results.

Input for the planner
Disclaimer

Step 1: What is my current situation? >>

Versie: 15.0.7

Figure A2. Screenshot of the welcome page on the pension planner. It welcomes the participant and explains the pension planner.

Huidige situatie

Hieronder staat jouw huidige pensioensituatie. Hier is nog geen rekening gehouden met de verschillende keuzemogelijkheden. Je ziet hier jouw gegevens per 31-12-2014. Deze informatie is in grote lijnen hetzelfde als de gegevens die op jouw laatste pensioenoverzicht staan. Maar als je bijvoorbeeld net bent gescheiden, kan er wel verschil zijn.

Jouw te bereiken pensioen (alle bedragen zijn bruto in € per jaar)		
Datum	31-12-2014	01-08-2026
Leeftijd		
Salaris		
Pensioen		
Basisregeling		
Voorwaardelijk pensioen		
AOW		
Totaal (Bruto)		
(%)	(100%)	(69%)

Bekijk je de gegevens liever in een grafiek? Klik dan hier.

<< Terug

Stap 2: Zelf een berekening maken >>

Versie: 15.0.7

Current Situation

Below you can find your current pension situation. The different choice opportunities have not been taken into account yet. You can see your details per 31-12-2014. This information is generally the same as the details of your last pension overview. But if, for example, you just got divorced, then there could be a difference.

The pension you could get (all amounts given are gross amounts in € per year)		
Date	31-12-2014	01-08-2026
Age		
Salary		
Pension		
Basic Scheme		
Conditional Scheme		
State pension		
Total (Gross)		
(%)	(100%)	(69%)

Would you rather see the details in a graph? Click here.

<<Back

Step 2: Make your own calculation >>
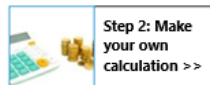
Versie: 15.0.7

Figure A3. Screenshot of the page of step 1 of the pension planner. Although this profile is empty, a participant would see the age, salary, pension, and state pension at the end of 2014 and on the date the participant will retire (here, August 1, 2026).

| → welkom | → stap 1 | → stap 2 | → stap 3 | → stap 4 | |

Wat kan de pensioenplanner voor mij berekenen?

Klik op onderstaande knop om te starten met de berekeningen:

Wat is de hoogte van mijn pensioen?

<u>**<< Terug**</u>

Versie: 15.0.7

| welcome | step 1 | → stap 2 | step 3 | step 4 | |

What can the pension planner calculate for me?
Push the button below to start the calculations:

What is the level of my pension?

<u>**<<back**</u>

Versie: 15.0.7

Figure A4. Screenshot of the page of step 2 of the pension planner. If the participant clicks on the picture, one can change assumptions of the planner.

welkom → **stap 1** → **stap 2** → **stap 3** → **stap 4**

Hoe hoog wordt mijn pensioen?

Om jouw pensioen te berekenen, hebben we aanvullende gegevens nodig.
Vul deze hieronder in.

Mijn gewenste pensioenleeftijd is 67 ▾ jaar en 0 ▾ maanden.

Zijn één of meer van onderstaande keuzes van toepassing? Dan kun je dat hier aangeven.

☐ Ben je van plan om te stoppen met werken in de detailhandel? ⓘ

☐ Wil je met deeltijdpensioen? ⓘ

☐ Heb je ergens anders ook pensioen opgebouwd? ⓘ

<< Terug

Stap 3:
Aanvullende
keuzemogelijk-
heden >>

Versie: 15.0.7

---

welcome → **step 1** → **step 2** → **step 3** → **step 4**

What will be my pension level?

In order to calculate your pension, we need additional details.
Fill these in below.

My desired pension age is 67 ▾ years and ▾ months.

Are one of more of the choices below applicable to you? You can then indicate that here.

☐ Are you planning to quit working in retail?

☐ Would you like to retire part-time?

☐ Have you accumulated pension elsewhere?

<<Back

Step 3: Additional
choice
opportunities >>
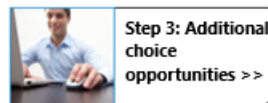
Versie: 15.0.7

Figure A5. Screenshot of the first page of step 3 of the pension planner. The participant can insert the desired pension age and tick boxes for stopping to work in the sector, retiring part time, and having accumulated a pension somewhere else.

Partnerpensioen voor mijn nabestaanden na mijn overlijden ℹ

⦿ Ik heb een partner en wil mijn partnerpensioen niet omzetten voor een hoger ouderdomspensioen.

○ Ik heb een partner en wil 70% partnerpensioen. ℹ

○ Ik heb een partner, maar wil mijn partnerpensioen omzetten voor een hoger ouderdomspensioen.

○ Ik ben alleenstaand en wil mijn partnerpensioen omzetten voor een hoger ouderdomspensioen.

☐ Wil je een in hoogte wisselend pensioen? ℹ

<< Terug

Stap 4:
De uitkomsten
in één
oogopslag >>

Versie: 15.0.7

Partner pension for my relatives after my death

⦿ I have a partner and I do not want to exchange the partner pension for a higher pension for myself.

○ I have a partner and I want 70% partner pension.

○ I have a partner, but I want to exchange the partner pension for a higher pension for myself.

○ I am single and I want to exchange the partner pension for a higher pension for myself.

☐ Would you like to have a pension with changing levels?

<<Back

Step 4: The
results in
one
glance >>

Versie: 15.0.7

Figure A6. Screenshot of the second page of step 3 of the pension planner. The participant can answer (1) she has a partner and does not want to exchange the partner pension for a higher pension for herself, (2) she has a partner and wants 70% partner pension, (3) she has a partner but wants to exchange the partner pension for a higher pension for herself, or (4) she is single and wants to exchange the partner pension for a higher pension for herself. The participant can also tick the box if she wants to have a pension that is either lower first and then higher, or higher first and then lower.

Je hebt gevraagd hoe hoog jouw pensioen is op basis van een gewenste pensioenleeftijd van 67 jaar en 0 maand(en).

De pensioenplanner heeft het volgende voor je berekend:
Jouw pensioeninkomen is 69% van je salaris.

Jouw te bereiken pensioen (alle bedragen zijn bruto in € per jaar)	
Datum	
Leeftijd	
Salaris	
🔵 Pensioen	
ℹ Basisregeling	
ℹ Voorwaardelijk pensioen	
ℹ AOW	
Totaal (Bruto)	
(%)	
Bruto per maand	
ℹ Netto per maand	
ℹ - waarvan netto van Pensioenfonds Detailhandel	

In de berekening is de loonheffingskorting toegepast.
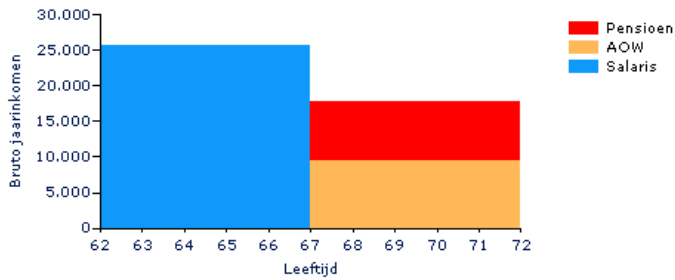
Welk partnerpensioen is er na mijn overlijden?
Input berekeningen

<< Terug   Print >>

Versie: 15.0.7

xxiii
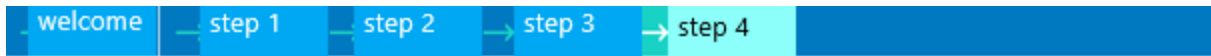
You have asked for the level of your pension based on a desired pension age of 67 years and 0 month(s).
The pension planner has calculated the following for you:
Your pension income is 69% of your salary.

The pension you could get (all amounts are gross amounts in € per year

Date
Age
Salary
Pension

Basic Scheme
Conditional pension

State pension
Total (Gross)
(%)
Gross per month
Net per month

- of which net of Pensioenfonds Detailhandel

In the calculation the payroll tax credit has been applied.

Pension
State pension
Salary

Age
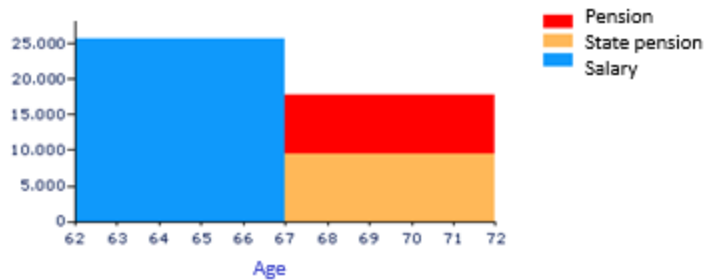
Which partner pension is there after my death?
Input calculations

<<Back   Print>>

Versie: 15.0.7

Figure A7. Screenshot of the page of step 4 of the pension planner. The participant again sees the same information items as in step 1, but now the changes and information given in steps 2 and 3 are taken into account.

Appendix D.

Survey Questions on Pension Knowledge and Where to Find the Answers

1. On *Pensioenfonds Detailhandel*'s pension planner, you can enter the age at which you wish to retire. As it stands, can you see how the age of retirement affects the size of your pension?

- Yes

- No, not in this version of the planner

- I don't know

The correct answer is "Yes" and could be found on the pension planner at *Stap* 3 (Step 3, see Figure A5 in Internet Appendix C). The pension planner states, "my desired retirement age is 67 years and 0 months." (The participants can change the 67 and 0; in Dutch: "Mijn gewenste pensioenleeftijd is 67 jaar en 0 maanden.")

2. You can tailor your own investment portfolio on *Pensioenfonds Detailhandel*'s website.

- True

- False

- I don't know

The correct answer is "False." You cannot change the investment portfolio in the pension planner, and changing the investment portfolio is not listed in the Pensioen 1-2-3 under "Which choices do you have?" ("Welke keuzes heb je zelf?").

3. Who pays the pension contributions for employee pensions?

- Usually only the employee

- Usually only the employer

- Usually both the employee and the employer

- I don't know

The correct answer is "Usually both the employee and the employer," This information could be found in the Pensioen 1-2-3 under "How do you accrue your pension?" ("Hoe bouw je pensioen op?"). The section reads:

You and your employer both contribute to your pension
Each month you pay contribution for your pension. Your employer does the same. The contribution rate at Pensioenfonds Detailhandel is 21.6%. Ask your employer how much you pay and how much your employer pays. The contribution that you pay can also be found on your salary statement.
*("**Jij en je werkgever betalen allebei voor jouw pension***
Je betaalt elke maand premie voor je pensioen. Je werkgever doet dat ook. Bij Pensioenfonds Detailhandel is de premie 21.6%. Vraag bij je werkgever na hoeveel jij betaalt en hoeveel je werkgever betaalt. De premie die je zelf betaalt, staat ook op je loonstrook.")

4. In the last two years, product prices in the Netherlands have risen. Did your pension with *Pensioenfonds Detailhandel* grow in line with price increases in the last two years? (This process is called indexation)

- Pensions have matched price increases

- Pensions did not match price increases

- I don't know

The correct answer is "Pensions did not match price increases." The Pensioen 1-2-3 contains the information in the section "How safe is your pension?" ("Hoe zeker is je pensioen?"):

Index-linked Pension
We try to let your pension grow annually with the price increases of that year. This is called indexation. This is only possible if the financial situation of our pension fund is good enough. The last years we have adjusted the pensions of participants like this:

	Indexation	*Change in Prices*
2017	*0.0%*	*1.4% increased*
2016	*0.0%*	*0.3% decreased*
2015	*0.0%*	*0.8% increased*
2014	*0.3%*	*0.6% increased*
2013	*0.0%*	*1.7% increased*

(Waardevast pensioen
Wij proberen jouw pensioen elk jaar mee te laten groeien met de prijzen. Dit heet indexatie. Dit kan alleen als de financiële situatie van ons pensionfonds goed genoeg is. De afgelopen jaren hebben wij de pensioenen voor deelnemers zo geïndexeerd:

	Indexatie	*Verandering van de prijzen*
2017	*0,0%*	*1,4% gestegen*
2016	*0,0%*	*0,3% gedaald*
2015	*0,0%*	*0,8% gestegen*
2014	*0,3%*	*0,6% gestegen*
2013	*0,0%*	*1,7% gestegen*

)

5. If you have accrued pension with *Pensioenfonds Detailhandel* and you get a new job, can you choose to transfer the accrued amount to another pension fund?

- Yes

- No

- I don't know

The correct answer is "Yes." The answer can be found in Pensioen 1-2-3 in the section "When do you have to act?" ("Wanneer moet je in actie komen?"). The subsection "If you change your job" ("Als je van baan verandert") reads: "If you have accrued pension with us, then you can take it with you to your new pension fund or insurer." ("Heb je bij ons pensioen opgebouwd, dan kun je dat meenemen naar je nieuwe pensioenfonds of –verzekeraar.")

6. When you retire, you can choose to receive a higher amount at the beginning of your pension followed by a slightly lower amount afterwards.

- True

- False

- I don't know

The correct answer is "True." In *Stap 3* (Step 3, see Figure A6 in Internet Appendix C), the pension planner asks, "Do you want a pension that varies in amounts?" ("Wil je een in hoogte wisselend pensioen?")

Appendix E. Multiple Hypotheses Testing

Table AIV
Multiple Hypotheses Adjustments According to List, Shaikh, and Xu (2019), Study 1

This table shows the multiple hypotheses adjusted p-values according to List, Shaikh, and Xu (2019). We refer to their remark and theorem. The first column presents the treatment group. DI stands for the differences in means between the treatment and control group. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

Letter	DI	p-values			
		Unadjusted		Multiplicity Adjusted	
		Remark 3.1	Theorem 3.1	Bonferroni	Holm
Fin. inc.	0.0110	0.0003***	0.0003***	0.0017***	0.0017***
SN:inc:fear	0.0022	0.0393**	0.0687*	0.1967	0.0787*
SN:inc:hope	0.0028	0.0087***	0.0220**	0.0433**	0.0260**
SN:sav:fear	0.0029	0.0077***	0.0243**	0.0383**	0.0031***
SN:sav:hope	0.0008	0.4657	0.4657	1.0000	0.4657

Table AV
Multiple Hypotheses Adjustments According to List, Shaikh, and Xu (2019), Study 2

This table shows the multiple hypotheses adjusted p-values according to List, Shaikh, and Xu (2019). We refer to their remark and theorem. The first column presents the treatment group. DI stands for the differences in means between the treatment and control group. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

Letter	DI	p-values			
		Unadjusted		Multiplicity-Adjusted	
		Remark 3.1	Theorem 3.1	Bonferroni	Holm
200*€10	0.0154	0.0003***	0.0003***	0.0017***	0.0003***
100*€20	0.0210	0.0003***	0.0003***	0.0017***	0.0010***
100*€10+€1,000	0.0241	0.0003***	0.0003***	0.0017***	0.0013***
4*€500	0.0347	0.0003***	0.0003***	0.0017***	0.0017***
2*€1,000	0.0366	0.0003***	0.0003***	0.0017***	0.0007***

Table AVI
Multiple Hypotheses Testing: Gender, Study 1 and Study 2

This table shows the multiple hypotheses adjusted p-values according to List, Shaikh, and Xu (2019). Panel A presents the results from Study 1, Panel B, from Study 2. The first column shows the gender, and the second column shows the treatment group. DI stands for differences in means between the treatment and control group. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

Subgroup	Letter	DI	p-values			
			Unadjusted		Multiplicity Adjusted	
			Remark 3.1	Theorem 3.1	Bonferroni	Holm
Panel A: Study 1						
Men	Fin.inc.	0.0093	0.0003***	0.0003***	0.0033***	0.0030***
Men	SN:inc:fear	0.0044	0.0367**	0.1953	0.3667	0.2567
Men	SN:inc:hope	0.0030	0.1610	0.4683	1.0000	0.6427
Men	SN:sav:fear	0.0038	0.0753*	0.2837	0.7533	0.3767
Men	SN:sav:hope	0.0010	0.6490	0.6490	1.0000	0.6490
Women	Fin.inc	0.0117	0.0003***	0.0003***	0.0033**	0.0033**
Women	SN:inc:fear	0.0012	0.3233	0.6687	1.0000	0.9700
Women	SN:inc:hope	0.0026	0.0233**	0.1437	0.2333	0.1867
Women	SN:sav:fear	0.0024	0.0380**	0.1813	0.3800	0.2280
Women	SN:sav:hope	0.0007	0.5350	0.7790	1.0000	1.000
Panel B: Study 2						
Men	200*€10	0.0091	0.0003***	0.0003***	0.0033***	0.0013***
Men	100*€20	0.0176	0.0003***	0.0003***	0.0033***	0.0020***
Men	100*€10+€1,000	0.0211	0.0003***	0.0003***	0.0033***	0.0030***
Men	4*€500	0.0339	0.0003***	0.0003***	0.0033***	0.0010***
Men	2*€1,000	0.0379	0.0003***	0.0003***	0.0033***	0.0017***
Women	200*€10	0.0187	0.0003***	0.0003***	0.0033***	0.0007***
Women	100*€20	0.0228	0.0003***	0.0003***	0.0033***	0.0023***
Women	100*€10+€1,000	0.0257	0.0003***	0.0003***	0.0033***	0.0027***
Women	4*€500	0.0351	0.0003***	0.0003***	0.0033***	0.0003***
Women	2*€1,000	0.0359	0.0003***	0.0003***	0.0033***	0.0033***

xxx

Table AVII
Multiple Hypotheses Testing: Age, Study 1 and Study 2

This table shows the multiple hypotheses adjustments according to the procedure proposed by List, Shaikh, and Xu (2019). Panel A presents the results for Study 1, and Panel B for Study 2. The first column shows the subgroup. The second column presents the treatment group. DI stands for the differences in means between the treatment and control group. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

Subgroup	Letter	DI	p-values			
			Unadjusted	Multiplicity Adjusted		
			Remark 3.1	Theorem 3.1	Bonferroni	Holm
Panel A: Study 1						
Above median age	Fin.inc.	0.012	0.0003***	0.0003***	0.0033***	0.0030***
Above median age	SN:inc:fear	0.0031	0.0637*	0.2863	0.6367	0.3820
Above median age	SN:inc:hope	0.0031	0.0740*	0.2847	0.7400	0.3700
Above median age	SN:sav:fear	0.0056	0.0010***	0.0057***	0.0100**	0.0080***
Above median age	SN:sav:hope	0.0017	0.3293	0.6853	1.0000	0.9880
Below median age	Fin.inc.	0.0096	0.0003***	0.0003***	0.0033***	0.0033***
Below median age	SN:inc:fear	0.0013	0.3047	0.7303	1.0000	1.0000
Below median age	SN:inc:hope	0.0025	0.0397**	0.2080	0.3967	0.2777
Below median age	SN:sav:fear	0.0003	0.8490	0.9740	1.0000	1.0000
Below median age	SN:sav:hope	0.0001	0.9617	0.9617	1.0000	0.9617
Panel B: Study 2						
Above median age	200*€10	0.0181	0.0003***	0.0003***	0.0033***	0.0007***
Above median age	100*€20	0.0225	0.0003***	0.0003***	0.0033***	0.0027***
Above median age	100*€10+€1,000	0.0267	0.0003***	0.0003***	0.0033***	0.0017***
Above median age	4*€500	0.0372	0.0003***	0.0003***	0.0033***	0.0023***
Above median age	2*€1,000	0.0389	0.0003***	0.0003***	0.0033***	0.0033***
Below median age	200*€10	0.0124	0.0003***	0.0003***	0.0033***	0.0003***
Below median age	100*€20	0.0193	0.0003***	0.0003***	0.0033***	0.0030***
Below median age	100*€10+€1,000	0.0212	0.0003***	0.0003***	0.0033***	0.0010***
Below median age	4*€500	0.0319	0.0003***	0.0003***	0.0033***	0.0013***
Below median age	2*€1,000	0.0341	0.0003***	0.0003***	0.0033***	0.0020***

Multiple Hypotheses Testing: Income, Study 1 and Study 2

This table shows the multiple hypotheses adjusted p-values according to List, Shaikh, and Xu (2019). Panel A presents the results for Study 1, and Panel B for Study 2. The first column shows the subgroup. The second column presents the treatment group. DI stands for differences in means between the treatment and control group. *** p<0.001, ** p<0.01, * p<0.05

Subgroup	Letter	DI	p-values			
			Unadjusted	Multiplicity Adjusted		
			Remark 3.1	Theorem 3.1	Bonferroni	Holm
Panel A: Study 1						
Above median income	Fin.inc.	0.0112	0.0003***	0.0003***	0.0033***	0.0033***
Above median income	SN:inc:fear	0.0030	0.0533*	0.2483	0.5333	0.3200
Above median income	SN:inc:hope	0.0030	0.0520*	0.2697	0.5200	0.3640
Above median income	SN:sav:fear	0.0026	0.0980*	0.3150	0.9800	0.3920
Above median income	SN:sav:hope	0.0011	0.4820	0.7323	1.0000	0.9640
Below median income	Fin.inc.	0.0106	0.0003***	0.0003***	0.0033***	0.0030***
Below median income	SN:inc:fear	0.0014	0.3513	0.7050	1.0000	1.0000
Below median income	SN:inc:hope	0.0025	0.0790*	0.3017	0.7900	0.3950
Below median income	SN:sav:fear	0.0031	0.0240**	0.1467	0.2400	0.1920
Below median income	SN:sav:hope	0.0005	0.7360	0.7600	1.0000	0.7600
Panel B: Study 2						
Above median income	200*€10	0.0162	0.0003***	0.0003***	0.0033***	0.0013***
Above median income	100*€20	0.0195	0.0003***	0.0003***	0.0033***	0.0017***
Above median income	100*€10+€1,000	0.0232	0.0003***	0.0003***	0.0033***	0.0003***
Above median income	4*€500	0.0331	0.0003***	0.0003***	0.0033***	0.0030***
Above median income	2*€1,000	0.0391	0.0003***	0.0003***	0.0033***	0.0027***
Below median income	200*€10	0.0146	0.0003***	0.0003***	0.0033***	0.0007***
Below median income	100*€20	0.0227	0.0003***	0.0003***	0.0033***	0.0033***
Below median income	100*€10+€1,000	0.0251	0.0003***	0.0003***	0.0033***	0.0010***
Below median income	4*€500	0.0365	0.0003***	0.0003***	0.0033***	0.0023***
Below median income	2*€1,000	0.0338	0.0003***	0.0003***	0.0033***	0.0020***

Appendix G. Further Graphs

**% respondents clicking on
pension planner at least once**
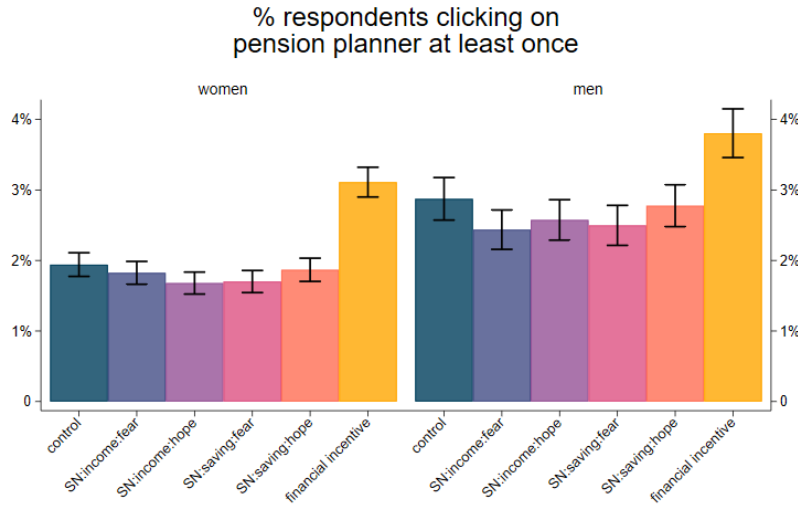
women   men

Figure A8. Percentage of respondents who visited their personal pension planner (per letter, by gender), Study 1. The sample is split by gender. The error bars represent the 95% confidence intervals. Table IA.5 in Internet Appendix E shows the mean differences and p-values for the differences.

**% respondents clicking on
pension planner at least once**

younger than median age   older than median age

Figure A9. Percentage of respondents who visited their personal pension planner (per letter, by median age), Study 1. The sample is split by the median age of 36 years. The error bars represent the 95% confidence intervals. Table IA.6 in Internet Appendix E shows the mean differences and p-values for the differences.

Figure A10. Percentage of respondents who visited their personal pension planner (per letter, by median income), Study 1. The sample is split by the median income of €15,622. The error bars represent the 95% confidence intervals. Table IA.7 in Internet Appendix E shows the mean differences and p-values for the differences.
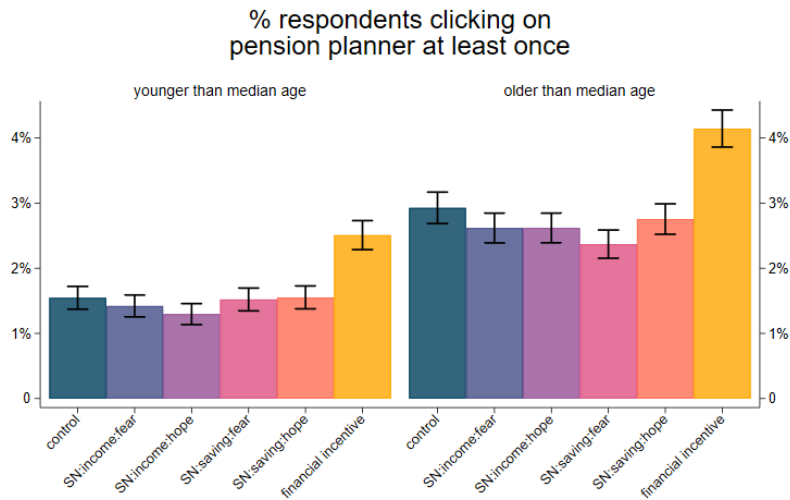

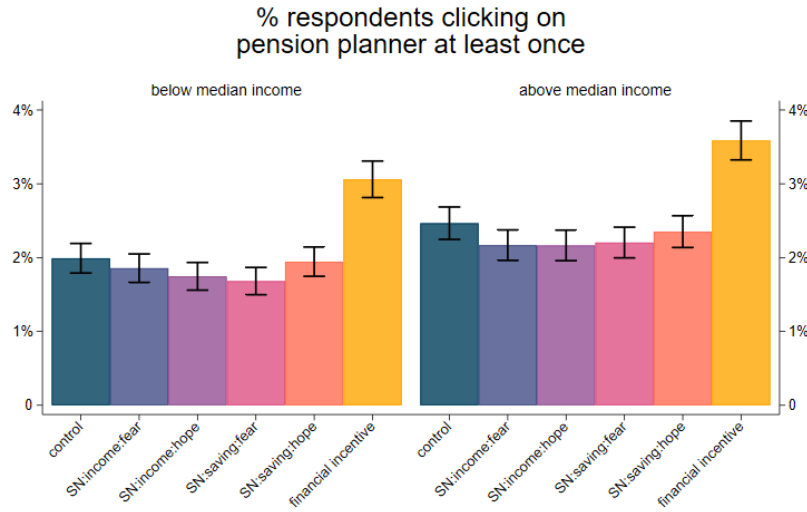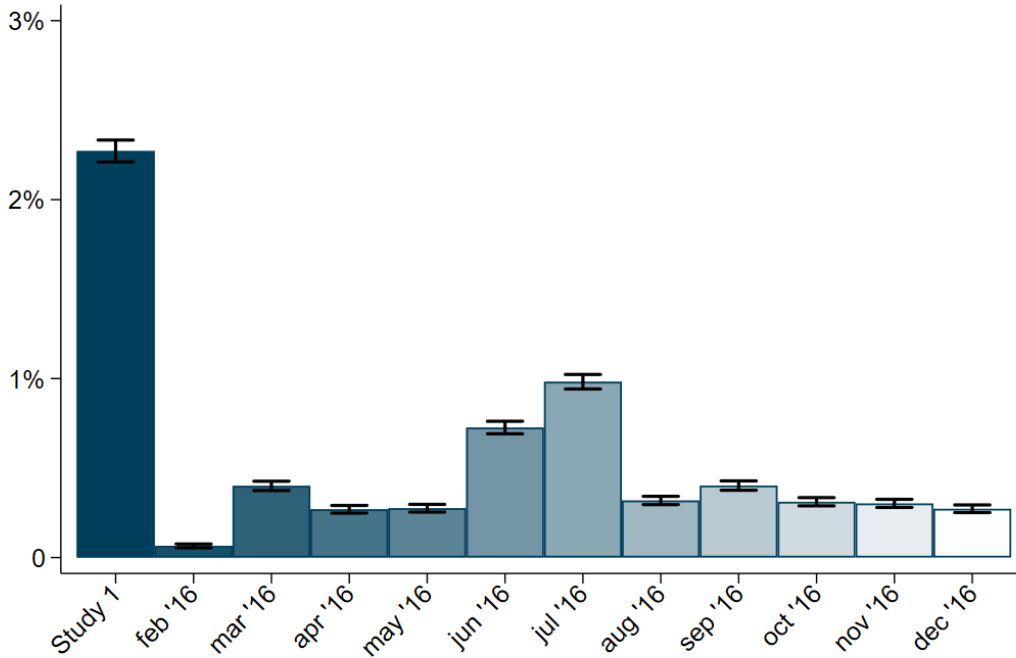**Figure A11.** Percentage of respondents who visited their personal pension planner (per month), Study 1, and 11 months after. The error bars represent the 95% confidence intervals. Study 1 covers the period of December 22, 2015, until February 1, 2016.
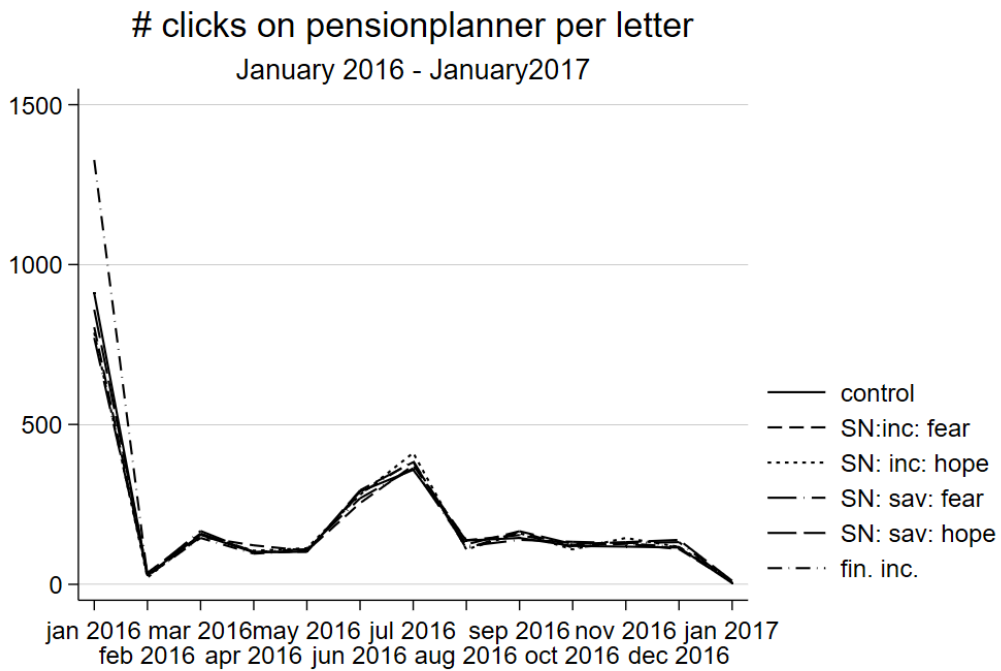
Figure A12. Number of clicks on the pension planner per letter, Study 1, and 11 months after.

Figure A13. Number of correct questions by whether participants looked at the pension planner, Study 2. The quiz questions can be found in Internet Appendix E. The error bars represent the 95% confidence intervals.

Appendix H. Further Regressions

Table AIX
The Effect of Treatments on Survey Initiation and Completion (Study 2)

This table shows the OLS regressions with the dependent variables *Initiated Survey* (binary variable) and *Answered Pension Knowledge Questions*. *200*€10*, *100*€20*, *100*€10+€1,000*, *4*€500*, and *2*€1,000* indicate which 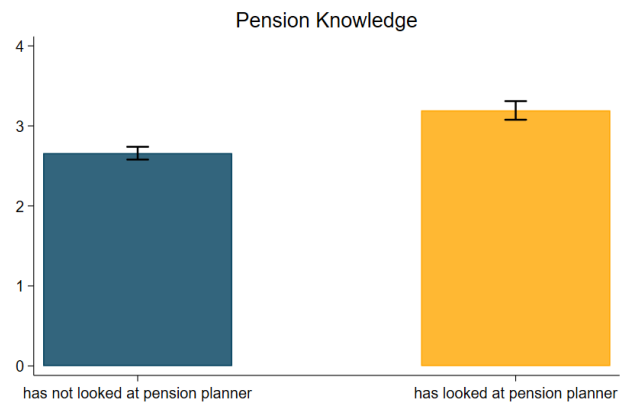letter a participant received. The control letter is the baseline. *Male* indicates the gender of the participant; women are the baseline. *Age: 30-39*, *Age: 40-49*, *Age: 50-59*, and *Age: 60-66* are levels indicating the participant's age group. Participants aged below 30 are the baseline category. The *Income-Quintile* rows indicate the income quintile to which the participant belongs. The first income quintile is the baseline category. *Part-timer* indicates the participants who worked less than full time. Full-timers are the baseline category. *Partner* indicates whether the member had a partner registered with the pension fund. We control for province dummies. Robust standard errors are in parentheses. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

	Initiated Survey	Answered Pension-Knowledge Questions
	(1)	(2)
200*€10	0.001	0.001**
	(0.001)	(0.001)
100*€20	0.001	0.001*
	(0.001)	(0.001)
100*€10+€1,000	0.002**	0.001
	(0.001)	(0.001)
4*€500	0.003***	0.002***
	(0.001)	(0.001)
2*€1,000	0.001	0.000
	(0.001)	(0.001)
Male	-0.001	0.001**
	(0.001)	(0.000)
Age: 30-39	0.000	0.001**
	(0.001)	(0.000)
Age: 40-49	0.003***	0.002***
	(0.001)	(0.000)
Age: 50-59	0.019***	0.011***
	(0.001)	(0.001)
Age: 60-66	0.050***	0.026***
	(0.002)	(0.002)
Income: 2nd Quintile	-0.000	-0.000
	(0.001)	(0.001)
Income: 3rd Quintile	0.001	0.000
	(0.001)	(0.001)
Income: 4th Quintile	0.003***	0.002**
	(0.001)	(0.001)
Income: Highest Quintile	0.003***	0.003***
	(0.001)	(0.001)
Part-timer	0.000	0.001
	(0.001)	(0.001)
Partner	0.002***	0.001*
	(0.001)	(0.000)
Constant	0.005***	0.001
	(0.001)	(0.001)
Observations	257,433	257,433
Adj R-Squared	0.010	0.005
Province Dummies	YES	YES

Table AX
IV Regression: Pension Planner and Alternative Pension-Knowledge Measure (Study 2)

This table shows coefficients of the two-stage least-squares instrumental-variable regression to analyze whether looking at the planner increases the likelihood of correctly answering questions specifically about the pension planner. The first stage is shown in Table VI, Column (1). *Pension Planner* is instrumented by the treatment letters. The second stage is a regression on *Pension Knowledge*, measured by a pension quiz score of only the two questions about the pension planner (i.e., the first two questions). *Male* indicates the gender of the participant; women are the baseline. *Age: 30-39*, *Age: 40-49*, *Age: 50-59*, and *Age: 60-66* are levels indicating the participant's age group. Participants aged below 30 are the baseline category. The *Income-Quintile* levels indicate the income quintile to which the participant belongs. *Part-timer* indicates the participants who worked less than a full-time position. Full-timers are the baseline category. *Partner* indicates whether the member had a partner registered with the pension fund. We control for province dummies. Robust standard errors are in parentheses. *** p<0.001, ** p<0.01, * p<0.05

	Alternative Pension Knowledge
Pension Planner	0.231
	(0.309)
Male	0.041
	(0.043)
Age: 30-39	0.081
	(0.071)
Age: 40-49	0.217*
	(0.083)
Age: 50-59	0.372***
	(0.078)
Age: 60-66	0.625***
	(0.080)
Income: 2nd Quintile	0.046
	(0.064)
Income: 3rd Quintile	0.102
	(0.066)
Income: 4th Quintile	0.145*
	(0.066)
Income: Highest Quintile	0.216**
	(0.068)
Part-timer	-0.058
	(0.053)
Partner	0.016
	(0.042)
Constant	-0.065
	(0.151)
Observations	2,231
Province Dummies	YES

Table AXI
IV Regression: Pension Planner and Pension Knowledge as Simple Sum (Study 2)

This table shows coefficients of the two-stage least-squares instrumental-variable regression. The first stage is shown in Table VI, Column (1). *Pension Planner* is instrumented by the treatment letters. The second stage is a regression on *Pension Knowledge as Sum*, measured by the number of correct answers in a pension quiz score of six questions. *Male* indicates the gender of the participant; women are the baseline. *Age: 30-39*, *Age: 40-49*, *Age: 50-59*, and *Age: 60-66* are levels indicating the participant's age group. Participants aged below 30 are the baseline category. The *Income-Quintile* levels indicate the income quintile to which the participant belongs. *Part-timer* indicates the participants who worked less than a full-time position. Full-timers are the baseline category. *Partner* indicates whether the member had a partner registered with the pension fund. We control for province dummies. Robust standard errors are in parentheses. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

	Pension Knowledge as Sum
Pension Planner	0.271
	(0.527)
200*€10	
100*€20	
100*€10+€1,000	
4*€500	
2*€1,000	
Male	0.238**
	(0.075)
Age: 30-39	0.241
	(0.135)
Age: 40-49	0.554***
	(0.146)
Age: 50-59	1.013***
	(0.138)
Age: 60-66	1.636***
	(0.135)
Income: 2nd Quintile	0.160
	(0.116)
Income: 3rd Quintile	0.133
	(0.118)
Income: 4th Quintile	0.205
	(0.121)
Income: Highest Quintile	0.522***
	(0.120)
Part-timer	0.013
	(0.094)
Partner	0.126
	(0.073)
Constant	1.538***
	(0.256)
Observations	2,231
Province Dummies	YES

Table AXII
Marginal Effects from a Recursive Simultaneous Bivariate Probit (Study 2)

This table shows the marginal effects from a bivariate probit regression. In the first regression, we regress *Pension Planner* on the treatment dummies and the covariates from Table IV. In the second regression, we regress *Saved More* on *Pension Planner* and the covariates from Table IV. *Pension Planner* indicates whether the participant looked at the pension planner. *Saved More* is equal to 1 if the participant has saved more in the three weeks before the survey, and 0 otherwise. *Male* indicates the gender of the participant; women are the baseline. *Age* indicates the age of the participant. The *Income-Quintile* rows indicate the income quintile to which the participant belongs. *Part-timer* indicates the participants who worked less than a full-time position but more than 0 hours a month. Full-timers are the baseline category. *Partner* indicates whether the member had a partner registered with the pension fund. We control for province dummies. Robust standard errors are in parentheses. *** p<0.001, ** p<0.01, * p<0.05

	Saved More
Pension Planner	-0.023
	(0.028)
Male	0.009
	(0.008)
Age: 30-39	-0.019
	(0.017)
Age: 40-49	-0.025
	(0.018)
Age: 50-59	-0.031
	(0.020)
Age: 60-66	-0.017
	(0.016)
Income: 2nd Quintile	-0.000
	(0.009)
Income: 3rd Quintile	0.007
	(0.010)
Income: 4th Quintile	0.005
	(0.010)
Income: Highest Quintile	0.014
	(0.012)
Part-timer	0.011
	(0.008)
Partner	0.002
	(0.006)
200*€10	0.005*
	(0.002)
100*€20	0.008*
	(0.003)
100*€10+b,1,000	0.007*
	(0.003)
4*€500	0.010**
	(0.003)
2*€1,000	0.008**
	(0.003)
Observations	2,231
Province Dummies	YES

Table AXIII
Fraction of Participants in Financial-Incentive Treatments per Employer (Study 1 and Study 2)
This table shows coefficients from the OLS regressions with the dependent variable *Pension Planner* (binary variable). *200*€10, 100*€20, 100*€10+€1,000, 4*€500, 2*€1,000*, and *Financial incentive in Study 1* indicate which letter a participant received. The control letter is the baseline. We control for the fraction of fund members who received a treatment letter per employer. We control for the covariates from Table IV. Robust standard errors are in parentheses. *** $p<0.001$, ** $p<0.01$, * $p<0.05$

	Pension Planner	
	Study 1	Study 2
	(1)	(2)
Financial incentive in Study 1	0.010***	
	(0.001)	
Fraction of fin. inc. letters per employer	0.003	
	(0.003)	
200*€10		0.014***
		(0.002)
100*€20		0.020***
		(0.002)
100*€10+b,1,000		0.024***
		(0.002)
4*€500		0.034***
		(0.002)
2*€1,000		0.037***
		(0.002)
Fraction of 200*€10 letters per employer		0.009
		(0.005)
Fraction of 100*€20 letters per employer		0.004
		(0.005)
Fraction of 100*€10+€1,000 letters per employer		0.002
		(0.005)
Fraction of 4*€500 letters per employer		0.005
		(0.005)
Fraction of 2*€1,000 letters per employer		-0.003
		(0.005)
Constant		0.031***
		(0.004)
Observations	226,946	257,433
Adj. R-Squared	0.013	0.010
Other Treatment Dummies	YES	
Other Covariates	YES	YES

Table AXIV
Interaction Effects between Study 1 and Study 2

This table shows the coefficients of OLS regressions with the dependent variable *Pension Planner* (binary variable). *200*€10*, *100*€20*, *100*€10+€1,000*, *4*€500*, and *2*€1,000* indicate which letter a participant received in Study 2. The control letter is the baseline. *Not a member in Study 1* indicates whether the participant was not a pension fund member during Study 1. *Fin. inc in Study 1* indicates the participant received the financial-incentive letter in Study 1. Participants who received either the control letter or a peer information letter are the baseline. *Male* indicates the gender of the participant; women are the baseline. *Age: 30-39*, *Age: 40-49*, *Age: 50-59*, and *Age: 60-66* are levels indicating the participant's age group. Participants aged below 30 are the baseline category. The *Income-Quintile* rows indicate the income quintile to which the participant belongs. The first income quintile is the baseline category. *Part-timer* indicates the participants who worked less than a full-time position. Full-timers are the baseline category. *Partner* indicates whether the member had a partner registered with the pension fund. We control for province dummies. Robust standard errors are in parentheses. *** p<0.001, ** p<0.01, * p<0.05

	Pension Planner in Study 2	
	(1)	(2)
200*€10	0.015***	0.013***
	(0.001)	(0.002)
100*€20	0.021***	0.017***
	(0.002)	(0.002)
100*€10+€1,000	0.024***	0.024***
	(0.002)	(0.002)
4*€500	0.035***	0.034***
	(0.002)	(0.002)
2*€1,000	0.037***	0.035***
	(0.002)	(0.002)
Not a member in Study 1	0.006***	0.004
	(0.001)	(0.002)
Fin. inc. in Study 1	0.001	-0.003
	(0.002)	(0.003)
Not a member in Study 1 x 200*€10		0.003
		(0.003)
Not a member in Study 1 x 100*€20		0.006*
		(0.003)
Not a member in Study 1 x 100*€10+€1,000		-0.000
		(0.003)
Not a member in Study 1 x 4*€500		0.002
		(0.003)
Not a member in Study 1 x 2*€1,000		0.003
		(0.003)
Fin. inc. in Study 1 x 200*€10		0.011
		(0.005)
Fin. inc. in Study 1 x 100*€20		0.013*
		(0.006)
Fin. inc. in Study 1 x 100*€10+€1,000		0.003
		(0.006)
Fin. inc. in Study 1 x 4*€500		0.002
		(0.006)
Fin. inc. in Study 1 x 2*€1,000		0.000
		(0.006)
Male	0.005***	0.005***
	(0.001)	(0.001)

Age: 30-39	-0.018***	-0.018***
	(0.001)	(0.001)
Age: 40-49	-0.019***	-0.019***
	(0.001)	(0.001)
Age: 50-59	0.007***	0.007***
	(0.002)	(0.002)
Age: 60-66	0.072***	0.072***
	(0.003)	(0.003)
Income: 2nd Quintile	-0.005**	-0.005**
	(0.002)	(0.002)
Income: 3rd Quintile	-0.008***	-0.008***
	(0.002)	(0.002)
Income: 4th Quintile	-0.006**	-0.006**
	(0.002)	(0.002)
Income: Highest Quintile	0.004*	0.004*
	(0.002)	(0.002)
Part-timer	0.007***	0.007***
	(0.001)	(0.001)
Partner	0.009***	0.009***
	(0.001)	(0.001)
Constant	0.030***	0.031***
	(0.003)	(0.003)
Observations	257,433	257,433
R-squared	0.010	0.010
Other Covariates	YES	YES