NBER WORKING PAPER SERIES

FINANCIAL REGRET AT OLDER AGES AND LONGEVITY AWARENESS

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Working Paper 30696 http://www.nber.org/papers/w30696

NATIONAL BUREAU OF ECONOMIC RESEARCH 1050 Massachusetts Avenue Cambridge, MA 02138 November 2022, Revised September 2023

The authors acknowledge research support for this work from the Health and Retirement Study at the University of Michigan, and the Pension Research Council/Boettner Center at The Wharton School of the University of Pennsylvania. We thank Yong Yu for excellent programming. The authors have benefited from comments by David Laibson and participants of the NBER Aging and SI groups, and participants at the 2023 Experimental Finance meeting. All findings and conclusions expressed are those of the authors and not the official views of any institutions with which the authors are affiliated. This research is part of the NBER Aging program and the Household Finance workshop. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

At least one co-author has disclosed additional relationships of potential relevance for this research. Further information is available online at http://www.nber.org/papers/w30696

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Financial Regret at Older Ages and Longevity Awareness Abigail Hurwitz and Olivia S. Mitchell NBER Working Paper No. 30696 November 2022, Revised September 2023 JEL No. D14,D15,D83,G22,G41,G51

ABSTRACT

Many older people express regret about undersaving; here, we extend prior work by reporting regret about five other critical financial topics. Using the Health and Retirement Study, we first show that older people who regret past financial decisions differ significantly from those who do not. Second, in an experiment, we demonstrate that informing people about objective survival probabilities increases regret about not buying lifetime income by 42% overall, and by more among the high income or those in good health. We also document that, for some, providing such information increases regret about having claimed social security early and undersaving. These results may explain previous findings about why survival information can alter financial decisions.

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Financial Regret at Older Ages and Longevity Awareness

1. Introduction

As the world's population ages, researchers and policymakers have proposed numerous strategies to spur workers' retirement saving¹ and boost insurance protection crucial for later life.² One motivation for such efforts is that around 60% of older U.S. respondents express regret not having saved more during their working years to ensure adequate retirement consumption.³ Nevertheless, it is unknown whether people work long enough and insure well enough to meet their late life needs. Moreover, most Americans do not purchase long-term care⁴ or longevity insurance,⁵ leaving them susceptible to health shocks and running out of money in old age. A handful of earlier studies has explored how demographic characteristics, wealth, personality traits, and external shocks affect elders' saving regret. For instance, Börsch-Supan et al. (2023) report that personality traits explain only a small fraction of the variation in saving regret, and that the most influential factor (explaining only 7.13% of the variation in regret) is shocks experienced earlier in life. In an experimental setting, Hurwitz et al. (2022a) show that informing people about both life expectancy and longevity risk boosts their interest in lifetime income annuities. Other studies find that peoples' decisions to save or buy insurance of various types are correlated with subjective survival probabilities.⁶ Unfortunately, some people are biased when predicting their expected survival probability,⁷ and others prefer to avoid thinking about mortality.⁸

To determine how lack of understanding regarding possible old-age survival can influence poor financial decision making, we analyze how longevity expectations shape financial regret in

¹C.f., Thaler & Benartzi (2004); Beshears et al. (2021); and O'Donoghue & Rabin (1999).

² C.f., Heimer et al. (2019); Horneff et al. (2020); Hurwitz & Sade (2020); Post & Hanewald (2013); and Remler & Glied (2003).

³ C.f., Mitchell & Moore (1998), Lusardi & Mitchell (2007); and Börsch-Supan et al. (2018). Morrison & Roese (2011) reported that 10% of American adults they surveyed reported financial regret; their experiment was quite different from ours, however, in that their participants had to report one salient regret in detail and then provide more information about that specific regret. The 12 domains they reviewed included education, romance, career, family, parenting, leisure, spirituality, finances, community, health, friends, and self-improvement. In a related study, Gruber et al. (2022) found that many who retired prior to a Finnish pension reform raising the retirement age returned to work afterwards.

⁴ C.f., Zhou-Richter et al. (2010); Brown et al. (2012); and Finkelstein & McGarry (2006).

⁵ C.f., Beshears et al. (2014); Brown (2001); and Finkelstein & Poterba (2004).

⁶ C.f., Bloom et al. (2007); O'Dea & Sturrock (2021) ; Hurd et al. (2004); and Salm (2010).

⁷ C.f., Elder (2013); and Wu et al. (2015).

⁸ C.f., McGarry (2022).

later life using an experimental module we designed and fielded on older Americans in the Health and Retirement Study (HRS). A first group of respondents (the Control Group) was not asked nor informed about either subjective or objective longevity. In two additional groups, we elicited older peoples' *subjective* survival probabilities; thereafter Treatment Group 1 received no additional information, while Treatment Group 2 was also informed about the *objective* risks of living a long time using age/sex survival tables. We then assessed whether our respondents reported regret regarding financial decisions made at younger ages, by asking all of them about their saving, insurance, financial dependence, and benefit claiming behavior when younger.

Our results reveal that many older Americans experience high levels of financial regret. Specifically, over half of our respondents regretted not having saved more, one third regretted not buying Long Term Care (LTC) insurance and not working longer, over a quarter regretted not having purchased lifetime income payments, a fifth regretted not delaying claiming social security benefits, and almost a tenth regretted having to depend on others financially. We also find that those who regretted their financial decisions differ significantly from those who did not along interesting income and health status dimensions; importantly, they also differed in terms of their longevity optimism. We then demonstrate that providing people with information about longevity risk significantly impacted the expressed remorse regarding financial decisions they made. Specifically, the provision of objective survival probability information resulted in a noteworthy increase in regret of having insufficient lifetime income of approximately 42% (=0.109/0.26), overall. This effect was even more pronounced for those in good health and having higher income. Our findings highlight the potential importance of providing people with information about objective survival probabilities, when they otherwise could misestimate their chances of living a long time and make less than optimal financial decisions.

Some prior studies suggest that people experience regret when they compare the potential results from having made one choice versus others, whereas regret is less likely when people cannot compare the results of the choices they made versus other outcomes.⁹ For instance, if someone does not understand or does not think about her anticipated longevity, she may be less likely to experience regret in later life regarding financial decisions made when young. Moreover, regret aversion could lead individuals to avoid seeking information about other possible outcomes, as well as the risks of the chosen option (Golman et al. 2017). Accordingly, we hypothesize that

⁹ E.g., Zeelenberg and Pieters (2004, 2007); Muermann et al. (2006); and George & Dane (2016).

since many people are unaware of (or avoid) objective survival information, informing them about the facts will increase their chances of experiencing regret and potentially alter financial choices relevant for old age.

2. Data and Methodology

We fielded our special-purpose module in the 2020 HRS assessing older Americans' experienced regrets about saving, insurance, financial dependency, and retirement behavior.¹⁰ For our research, the survey organization randomly selected 1,612 individuals over the age of 50 to participate in this module, whom it randomly assigned to one of three conditions. The Control Group (C) was asked only the regret questions (and not about subjective survival expectations nor provided with objective survival probabilities). Group T1 was asked about subjective survival probabilities (described below) followed by the regret questions; and Group T2 was asked about subjective survival probabilities followed by objective information about longevity (also described below), and thereafter the regret questions. This experimental design was intended to draw peoples' attention to their subjective assessment of potential longevity, and for Group T2, to also show them objective information on longevity. Our hypothesis was that respondents not alerted to objective longevity information might not understand the potential consequences of their financial decisions or the outcomes of options not chosen. Hence, making this concept more salient would be expected to draw their attention to their financial decisions both taken and not taken, and consequently to shape their reported regret.

In our sample, the average age of respondents was 71.4, over half (56%) were female, and 62% were married; moreover, 84% of respondents were White, 10% Black, and 7% Hispanic. Around 10% had less than a high school education, 30% completed high school, 25% had some college, and 35% completed college or had advanced degrees. A majority (67%) of respondents were retired, and three-quarters rated themselves in good or better health. Table 1 (and Appendix Table 1) provide summary statistics for the entire sample and each treatment group.

Table 1 here

To evaluate how people rated their subjective chances of survival to older ages, we asked two questions of respondents in both T1 and T2 regarding their subjective longevity expectations.

¹⁰ The HRS is a nationally representative panel study of Americans age 50+; for further information see <u>About | Health</u> and <u>Retirement Study (unich.edu)</u>, All results reported herein use HRS sample weights.

First, we asked: What is the percent chance that you will live at least [F3*Sex*Current age] more years? Next, we asked: And what is the percent chance that you will live at least [F4*Sex*Current age] more years?¹¹ Participants in the second group (T2) were then informed about objective survival probabilities as follows: According to statistics, out of 100 [men/women (specify R's Sex)] your age, about [F5*Sex*current age] will live at least [F4*Sex*current age] more years on average. Would you say your chances of living at least [F4*Sex*current age] more years are higher than that, lower than that, or about the same? Control group participants were not asked these additional questions.

To consistently measure longevity optimism, we then compare peoples' subjective survival probabilities obtained from the HRS core dataset (Control Group participants were not asked nor informed about survival probabilities in the module) and US cohort life tables from 2021.¹² This enables us to calculate the variable SLE LE, representing the difference between peoples' subjective and objective survival probabilities (as in Hurwitz et. al, 2022a).¹³ To assess financial regret, we asked all respondents about financial decisions they might have made in the past. We deliberately avoided using the term "regret" to prevent imposing our own interpretation on the participants' responses. Specifically, to evaluate saving regret, we asked: Think about your saving over your life: do you think that what you saved was too little, about right, or too much? and we code the variable Undersaving regret such that it takes the value of 1 if participant i saved too little (and 0 else; Börsch-Supan et al. 2023). Extending the same logic to LTC insurance purchase, we first asked: Do you currently have Long Term Care insurance? (Insurance for nursing home care?) And for those who answered that they did not, we then asked: If you could do it all over again, do you think you would purchase more Long Term Care Insurance? Next, we code the variable LTC regret such that it takes the value of 1 if participant i answered yes (0 else). Similarly, we asked about social security claiming: If you could do it all over again, do you think you would have delayed claiming social security until later, in exchange for higher benefit payments? and we code the variable Social Security early claim regret such that it takes the value of 1 if participant i answered yes (0 else). For life annuities, we asked participants who mentioned purchasing

¹¹ The questionnaire and look-up tables are available online at <u>Module9 Longevity and Regret 2020B-A.pdf</u> (<u>umich.edu</u>).

¹² We do not have access to life tables by race/health; nevertheless social security benefits and annuity pricing are not based on race/health life tables.

¹³ A positive value reflects survival optimism, while a negative value indicates survival pessimism. The sample mean of 3.33 indicates slight optimism overall.

longevity insurance: If you could do it all over again, do you think you would have purchased a higher lifetime payment in exchange for a higher premium? And we further asked those with no longevity insurance: If you could do it all over again, do you think you would have purchased a lifetime payment from an insurance provider? We then code the variable Lifetime income regret such that it takes the value of 1 if participant *i* answered yes to either question (0 else). Regarding financial dependence on others, respondents were first asked: Do you feel financially dependent on someone other than yourself? as well as: If you could do it all over again, do you think you would save more for retirement to avoid depending on them? We then code the variable *Fin. dependence regret* such that it takes the value of 1 if participant, we asked: If you could do it all over again, do you think you think you would have worked longer, stopped at about the same age, or stopped working sooner? We code the variable Quit work too soon regret such that it takes the value of 1 if the respondent answered that she would have worked longer (0 else).

Results in Table 1 document that a majority of older Americans in this nationally representative survey regretted several key financial decisions made in the past. Over half (52%) regretted not having saved more,¹⁴ and the two most common reasons for insufficient saving were not planning ahead (27%), and living day to day (29%) (other reasons given appear in Table 2). One third (33%) expressed regret for not having bought Long Term Care (LTC) insurance, 34% regretted not working longer, 26% regretted not having purchased more lifetime income, 19% regretted taking social security benefits early, and 9% regretted being financially dependent on others. In other words, older respondents report regrets over quite a wide range of important financial decisions critical for old age wellbeing. The questions regarding regret at saving and stopping work too soon were symmetric, so participants could report regret for either making or not making these decisions. Since only 1.5% of our sample indicated they regretted saving too much and 6% regretted working too long, we view this as evidence confirming evidence of the depth of regret at older ages (see Table 2).

Tables 1 and 2 here

¹⁴ Comparable to 59% of the age 60-79 RAND American Life Panel respondents saying they regretted not saving enough; Börsch-Supan et al. (2023).

Figure 1 explores significant differences between respondent subgroups who expressed regret regarding their financial decisions, versus those who did not.¹⁵ Specifically, a smaller percentage of Whites (79% vs. 90%), married persons (56% vs. 68%), and educated respondents (24% with a college or higher education vs. 47% without) indicated remorse for not having saved enough. Additionally, fewer participants in good health (71% vs. 87%) regretted saving too little, and those who did were significantly less wealthy. Moreover, regretful participants were significantly less optimistic regarding their chances of survival, compared to those not experiencing undersaving regret. We also see that women were more likely to regret not buying this long term care insurance than men (63% vs. 53%), but Whites were less likely (72% vs. 90% for non-Whites), married persons (52% vs. 66% of the non-married), and the better-educated (27% vs. 36% for the less educated). Likewise, women were more likely to regret not having bought lifetime annuities (64% vs. 54% than men); fewer Whites did so (67% vs. 90% for non-Whites), married persons (49% vs. 66% for nonmarried), and better-educated (19% vs. 40% of the less educated). Additionally, fewer of those reporting themselves in good health (72% vs. 83% in poor health) regretted their lack of LTC insurance, and those who did were significantly less wealthy. Furthermore, only two-thirds (67%) of those in good health regretted their annuity decisions, versus 83% of those in worse health; wealthier persons were also less likely to regret not having bought lifetime income insurance. Interestingly, people whose subjective life expectancy was closer to the objectively measured life expectancy were less likely to regret virtually every financial decision.

Figure 1 here

3. Multivariate Results

To explore these patterns further, we next estimate multivariate regression models of the following form for all individuals ($i = 1 \dots N$), and for each of the six dependent regret variables (*j*) of interest:

$$regret_{i,j} = \alpha_j + \beta_{1,j}T1_i + \beta_{2,j}T2_i + \gamma_jX'_i + \epsilon_{i,j}$$

Controls include an indicator for being in Treatment Group 1 queried only about subjective survival probabilities $(T1_i)$; or for being in Treatment Group 2 asked about subjective probabilities

¹⁵ A full comparison between those who do/do not regret each financial decision appears in Online Appendix Table 1.

and who additionally saw the objective survival table information $(T2_i)$. The reference group is the Control. We also include a vector of controls, X'_i , including the respondent's *Age* (in years); *Female*=1 if the respondent was female (else 0); indicators of race/ethnicity (*Black, Hispanic,* and *Other*, with White as the reference group); *Married*=1 if respondent was married (0 else); indicators of educational levels (*high school, some college, college+;* the reference group is high school dropout); employment status (*working, retired;* reference group was *other* including unemployed, disabled, homemaker); an indicator of *Good health* =1 if self-reported health was good/very good/excellent (else 0); *Memory* score;¹⁶ and *CESD* or depression score¹⁷ as well as a measure for *Life satisfaction.*¹⁸ We further control on household net wealth and income in \$2020: *HH total wealth* and *HH total income*); *Financial planning horizon* which takes values 1-5 indicating the time horizon over which the respondent made financial plans (next few months, next year, next few years, next 5-10 years, longer than 10 years, as in Khwaja et al. 2006). Additionally, we include a variable we call *longevity optimism*, measured as the gap between each respondent's subjective and life table survival probability by sex and age.¹⁹

Next, we summarize the factors associated with each of the six financial regret outcomes of interest after which we highlight the impact of the two treatments versus the Control group, to show how providing longevity information shaped older peoples' evaluation of their past financial decisions. We provide results for the full sample as well as for subgroups by health status and income.

Factors associated with financial regret at older ages

Table 3 summarizes our main findings regarding regret at older ages across the six financial domains of interest, where each column includes a parsimonious set of controls. Overall, the evidence indicates that regret regarding undersaving and being financially dependent declines with age, while regret rises with age for claiming social security too early. Nevertheless, older people were no more likely to regret not having bought LTC insurance or higher lifetime income. Women were 21% (=-0.041/0.19) less regretful than men about having claimed social security early, yet

¹⁶ The memory score totals the number of words correctly recalled immediately from a list of 10 words read to the respondent and after a delay of five minutes.

¹⁷ This measures symptoms of depression computed from eight questions taken from the Center for Epidemiologic Studies Depression Scale (CESD); see Steffick (2000). A higher score indicates more depressive symptoms.

¹⁸ To calculate life satisfaction, we follow Diener, Emmons, Larsen and Griffin (1985) and Pavot and Diener (1993).

¹⁹ We also included fixed effects for the month during which the interview was conducted Some specifications also controlled for self-reported probabilities of working past 70, but this had no qualitative impact on our coefficients of interest (results available on request).

they reported 42% (=0.038/0.09) greater disappointment regarding financial dependence and 28% (=0.073/0.26) more regret for not buying annuities. Black respondents were notably more regretful than Whites, particularly regarding having claimed social security benefits too soon (37% more likely), not having bought LTC (82% more likely), and not having purchased lifetime income (101% more likely).²⁰ Hispanics also regretted not having lifetime income more than did Whites (73.5% more likely). Americans' low level of LTC demand thus may stem from their beliefs about the likelihood of needing this insurance, along with the availability of substitutes for formal care (Zhou-Richter et al. 2010; Brown et al. 2012).

Table 3 here

These results also show that better-educated respondents expressed less regret than high school dropouts regarding saving too little, quitting work too soon, not purchasing LTC and lifetime income, and being financially dependent. Those scoring higher on the depression scale were more likely to regret undersaving as well as not having bought lifetime insurance. Conversely, those more satisfied with their lives were generally less inclined to experience regret.²¹ Higher income respondents were more likely to regret undersaving regret and becoming financial dependent on others, controlling on wealth, whereas the wealthier had lower undersaving regret and less concern about depending financially on others, along with lower regret for quitting work too early. This last result contributes to a literature examining the relationship between wealth and insurance: though some theoretical studies have predicted a negative correlation between wealth and insurance purchase (Gollier 2003; Koijen et al. 2016), there is also evidence that wealthier people hold more insurance (Eisenhauer & Halek 1999; Fang & Kung 2021). In the HRS older population, we confirm that regret about saving too little, quitting work too soon, and depending financially on others, are all negatively associated with being wealthier.

Longevity awareness and financial regret

Table 3 additionally documents whether and how the two different information treatments we provided shaped respondents' reported financial regret. In the full sample, which includes those who did and did not regret, simply asking people about their subjective survival probabilities (T1)

²⁰ The higher likelihood of regretting not buying LTC insurance among Blacks and Hispanics is consistent with racial disparities in LTC purchase reported by McGarry & Temkin-Greener (2014), as is the likelihood of persons from minority groups and with higher depression scores to reside in poor quality nursing homes (Fennell et al. 2010). ²¹ The findings with regard to undersaving regret by age, education, and wealth are comparable to Börsch-Supan et al.

^{(2023).} That study did not examine the additional financial regret outcomes explored here.

only modestly altered reported savings regret. By contrast, respondents who received the objective longevity information (T2) were 42% (=0.109/0.26) significantly more likely than average to say they regretted not having purchased more lifetime income. Since annuities provide insurance protection against old-age risk, this is an important finding, implying that information provision can be a potent as well as cost-effective method of alerting people to and helping them protect against running out of money in old age.

To further examine how our two interventions shaped responses by specific subgroups, we explored their effects for respondent sub-groups of particular interest (see Appendix Table 2).²² Giving high-income respondents objective survival information greatly increased their regret about undersaving by 133%, and underannuitizing by 49%. People in good health were strongly influenced by the longevity information: receiving objective survival probability information boosted their underannuitization regret by 51%, and regret for early social security claiming by 37%.

4. Conclusions and Implications

Our analysis confirms that providing longevity information can increase older peoples' regret related to financial decisions crucial for later life wellbeing, including the purchase of long term care insurance and annuities, and social security claiming behavior. To this end, our special-purpose HRS module allowed us to assess saving, work, and insurance regret by randomly assigning participants to a Control and two Treatment groups, one of which was asked about their subjective longevity perception, while the second also received objective longevity information. Our first key finding is that many older Americans regret having made numerous financial decisions. Over half (52%) of the participants expressed regret about having undersaved; about one third regretted not having purchased LTC and not working longer; 26% regretted not annuitizing; 19% regretted claiming social security too early; and 9% regretted depending on others for financial matters. Moreover, for the symmetric regret questions posed, we found that respondents were significantly more likely to regret *not taking* the action than *taking it*, adding to the ongoing debate about whether policymakers should do more to guide financial choices pertaining to retirement saving and insurance. Second, we show that people who regretted these financial decisions differed from those who did not. In particular, Black and Hispanic respondents

²² These results are reported without adjustments for multiple testing.

were notably more regretful than their White counterparts, as were women versus men, regarding claiming social security benefits too early, not buying annuities, and not having long term care insurance. We also document that providing longevity information significantly influenced older persons' experienced regret regarding financial decisions, and providing them with objective survival probabilities led to an overall 42% increase in regret regarding underannuitization. Those in good health and having higher income who received objective survival information reported regret in additional financial domains, most notably regarding unerannuitization and having claimed social security benefits too early.

Our results illuminate a key explanation for regret among the elderly regarding financial decisions made earlier in life: namely that they underestimated their future longevity when they made key saving, insurance, and benefit claiming decisions. Additionally we reconfirm that peoples' subjective survival probabilities correlate with their financial behavior, and informing them about their objective survival probabilities alters how they view these financial decisions. We therefore conclude that giving people objective longevity information when they make key financial decisions is likely to help them avoid making mistakes and hence avoid regret in later life. Moreover, researchers and policymakers interested in boosting saving and insurance coverage can learn from our evidence, since we show that better understanding of these risk management tools can strengthen old age financial resilience.

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Figure 1. Respondent characteristics of those who did/did not regret Panel a. Female %





Panel c. Married %



Panel d. College+ %



Panel e. Good health %



Panel E. HH wealth (US 1,000 \$)





Panel f. Subjective vs. life table survival probabilities %

Note: Confidence intervals indicate +/- 5% significance around the estimated mean. All data weighted; for variable definitions, see text.

	Full sample]]	Γ1	1	72	Control	
Variable	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
Undersaving regret	0.52	0.02	0.54	0.03	0.52	0.02	0.50	0.03
LTC regret	0.33	0.02	0.33	0.02	0.35	0.02	0.32	0.03
Lifetime income regret	0.26	0.01	0.25	0.03	0.32	0.03	0.21	0.02
Fin. dependence regret	0.09	0.01	0.11	0.02	0.08	0.01	0.08	0.02
Social Security early claim								
regret	0.19	0.01	0.21	0.03	0.20	0.02	0.17	0.02
Quit work too soon regret	0.34	0.02	0.35	0.04	0.36	0.04	0.31	0.03
N	1,612		539		518		555	

Table 1. Descriptive Statistics of Regret Variables: Overall and by Treatment Group

Notes: Group T1 was asked about subjective survival probabilities and thereafter about regrets; Group T2 was asked about subjective survival probabilities, followed by receiving objective information about longevity, and thereafter about regrets. The Control Group was only asked regret questions. All data weighted; for variable definitions, see text.

Total	997	100%
Dk	74	7%
Business downturn	28	3%
Lost my job	3	0%
Have difficulty saving	78	8%
Children's expenses	37	4%
School costs	4	0%
Live day to day	285	29%
Didn't plan ahead	272	27%
Debt	21	2%
Taxes	4	0%
Medical costs	22	2%
Expenses	169	17%

Table 2. Common reasons given for insufficient savings

Notes: Common reasons for insufficient savings as described by participants and categorized, N=997 includes only those who regretted undersaving and provided a reason.

	Undersa regre		LTC re	gret	Lifetin income r		Fin. depende regre	ence	Social Sec early cla regre	aim	Quit work soon reg	
T1	0.021		0.009		0.038		0.006		0.042		0.030	
	(0.03)		(0.03)		(0.04)		(0.01)		(0.03)		(0.05)	
T2	-0.013		0.015		0.109	***	-0.007		0.025		0.043	
	(0.04)		(0.03)		(0.03)		(0.01)		(0.03)		(0.05)	
Age	-0.007	**	0.000		-0.002		-0.004	***	0.005	***	-0.005	
	(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)	
Female	0.010		0.101	***	0.073	**	0.038	***	-0.041	**	0.068	
	(0.04)		(0.03)		(0.03)		(0.01)		(0.02)		(0.05)	
Black/African American	-0.092	*	0.271	***	0.264	***	-0.015		0.071	**	0.031	
	(0.05)		(0.04)		(0.05)		(0.01)		(0.03)		(0.05)	
Others, race	0.159	*	0.187	**	0.076		-0.009		0.066		0.189	*
	(0.08)		(0.09)		(0.07)		(0.02)		(0.05)		(0.10)	
Hispanic	0.050		0.037		0.191	**	-0.001		0.095		0.025	
	(0.07)		(0.06)		(0.08)		(0.02)		(0.06)		(0.08)	
Married	0.053		-0.043		-0.046	*	0.050	***	-0.012		-0.051	
	(0.03)		(0.04)		(0.03)		(0.02)		(0.02)		(0.04)	
Education, high school	-0.117	**	-0.103	**	0.014		-0.022		-0.012		-0.125	**
	(0.05)		(0.04)		(0.04)		(0.01)		(0.03)		(0.05)	
Education, some college	-0.102		-0.143	***	-0.036		-0.031	**	0.032		-0.083	
	(0.06)		(0.04)		(0.04)		(0.01)		(0.03)		(0.06)	
Education, college+	-0.170	***	-0.140	***	-0.105	***	-0.050	***	-0.016		-0.155	***
	(0.06)		(0.05)		(0.04)		(0.02)		(0.03)		(0.06)	
Employment, working	0.086		-0.002		0.026		-0.041	***	-0.047			
	(0.08)		(0.05)		(0.04)		(0.02)		(0.03)			
Employment, retired	0.016		-0.029		-0.005		-0.017		-0.007		-0.065	
	(0.05)		(0.05)		(0.04)		(0.02)		(0.03)		(0.06)	
Good health	-0.002		-0.009		-0.033		0.000		0.016		-0.006	
	(0.06)		(0.04)		(0.03)		(0.02)		(0.02)		(0.04)	
Memory score	0.005		-0.004		-0.006		-0.001		0.000		-0.009	
	(0.01)		(0.01)		(0.00)		(0.00)		(0.00)		(0.01)	
CESD	0.031	**	0.011		0.013	*	0.003		0.006		0.014	
	(0.01)		(0.01)		(0.01)		(0.00)		(0.00)		(0.01)	
SLE_LE	-0.010		0.005		0.069	*	0.014		0.000		-0.137	**
-	(0.08)		(0.06)		(0.04)		(0.02)		(0.04)		(0.07)	
HH total wealth (\$100k)	-0.047	***	-0.003		-0.002		-0.004	***	0.000		-0.007	***
	(0.00)		(0.00)		(0.00)		(0.00)		0.00		(0.00)	
HH total income (\$100k)	0.055	**	0.005		0.009		0.023	***	-0.004		-0.004	
	(0.03)		(0.03)		(0.03)		(0.01)		(0.01)		(0.04)	
Financial planning horizon	-0.041	***	-0.002		-0.001		-0.014	***	0.002		0.009	
	(0.02)		(0.01)		(0.01)		(0.01)		(0.01)		(0.02)	
Life satisfaction	-0.092	***	-0.032	***	-0.020	**	-0.007		-0.030	***	-0.006	
	(0.02)		(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
Survey month dummy	Y		Y		Y		Y		Y		Y	
SubpopN	1,608		1,610		1,610		1,611		1,611		1,118	
Ftest	8.00		6.99		7.11		4.38		10.49		2.89	
P value	0.00		0.00		0.00		0.00		0.00		0.00	
	0.52		0.33		0.00		0.00		0.19		0.34	

 Table 3. Multivariate Models of Regret regarding Undersaving, Insurance, and other Financial Decisions.

Notes: Column (1) refers to regret about undersaving; Column (2) refers to regret about not having long term care insurance; Column (3) refers to regret about insufficient lifetime income; Column (4) regret for being financially dependent on others; Column (5) regret for having claimed social security early; and Column (6) refers to regret for quitting work too soon. Group T1 was asked about subjective survival probabilities; Group T2 was provided with objective survival probabilities as well. Standard errors in parentheses * p<0.10, ** p<0.05, *** p<0.01 All data weighted; for variable definitions, see text.

Appendix Table 1. Descriptive statistics

	Full sample		Г	71	Т	2	Control	
Variable	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
Undersaving regret	0.52	0.02	0.54	0.03	0.52	0.02	0.50	0.03
LTC regret	0.33	0.02	0.33	0.02	0.35	0.02	0.32	0.03
Lifetime income regret	0.26	0.01	0.25	0.03	0.32	0.03	0.21	0.02
Fin. dependence regret	0.09	0.01	0.11	0.02	0.08	0.01	0.08	0.02
Social Security early claim								
regret	0.19	0.01	0.21	0.03	0.20	0.02	0.17	0.02
Quit work too soon regret	0.34	0.02	0.35	0.04	0.36	0.04	0.31	0.03
Age	71.40	0.28	71.29	0.39	71.30	0.50	71.62	0.34
Female	0.56	0.01	0.61	0.03	0.55	0.03	0.53	0.03
White	0.84	0.01	0.85	0.02	0.81	0.02	0.86	0.02
Black/African American	0.10	0.01	0.09	0.01	0.13	0.02	0.08	0.01
Other race	0.06	0.01	0.06	0.01	0.06	0.02	0.06	0.01
Hispanic	0.07	0.01	0.09	0.02	0.06	0.01	0.08	0.01
Married	0.62	0.02	0.64	0.03	0.61	0.03	0.61	0.03
Education, less than high								
school	0.10	0.01	0.08	0.01	0.10	0.01	0.10	0.01
Education, high school	0.30	0.02	0.32	0.03	0.29	0.03	0.29	0.03
Education, some college	0.25	0.01	0.25	0.03	0.25	0.02	0.26	0.03
Education, college+	0.35	0.02	0.35	0.03	0.36	0.03	0.34	0.03
Employment, working	0.20	0.02	0.18	0.03	0.19	0.03	0.22	0.03
Employment, retired	0.67	0.02	0.68	0.03	0.66	0.03	0.67	0.03
Good health	0.79	0.01	0.78	0.02	0.79	0.03	0.80	0.02
Memory score	10.67	0.14	11.00	0.21	10.61	0.19	10.39	0.21
CESD (depression score)	1.28	0.07	1.42	0.11	1.17	0.11	1.25	0.12
HH total wealth (2020\$)/1000	1,007.55	166.49	745.03	95.60	861.92	103.36	1,407.18	486.76
HH total income (2020\$)/1000	84.78	4.83	78.78	5.98	82.27	5.52	93.10	9.98
SLE_LE	3.33	0.04	3.31	0.07	3.26	0.06	3.41	0.07
Financial planning horizon	-0.04	0.01	-0.06	0.02	-0.03	0.02	-0.03	0.02
Life satisfaction	5.16	0.05	5.24	0.09	5.01	0.07	5.22	0.08
SubpopN	1,612		539		518		555	

Notes: For variable definitions see Section 3. All data weighted; for variable definitions, see text.

A: Good Health	Undersaving regret	LTC regret	Lifetime income regret	Fin. dependence regret	Social Security early claim regret	Quit work too soon regret
Treatment 1	0.031	-0.011	0.057	0.019	0.062 *	0.007
	(0.04)	(0.04)	(0.05)	(0.02)	(0.03)	(0.06)
Treatment 2	0.068	-0.007	0.113 ***	-0.004	0.063 **	0.060
	(0.04)	(0.05)	(0.04)	(0.01)	(0.03)	(0.05)
SubpopN	1,202	1,205	1,204	1,205	1,205	795
Mean of dep var.	0.47	0.30	0.22	0.08	0.17	0.31
B: High income (>=\$71,000)	Undersaving regret	LTC regret	Lifetime income regret	Fin. dependence regret	Social Security early claim regret	Quit work too soon regret
Treatment 1	0.040	0.020	0.081	0.036	0.031	0.038
	(0.06)	(0.06)	(0.06)	(0.03)	(0.03)	(0.10)
Treatment 2	0.197 **	0.047	0.213 ***	-0.002	0.038	0.193 *
	(0.07)	(0.06)	(0.07)	(0.01)	(0.03)	(0.12)
SubpopN	490	490	491	490	491	276
Mean of dep var.	0.40	0.25	0.16	0.09	0.12	0.25

Appendix Table 2. Multivariate Models of Financial Regret by Population Subgroup

Notes: Standard errors in parentheses * p<0.10, ** p<0.05, *** p<0. For additional controls see Table 3. All data weighted; for variable definitions, see text.

				1		
Panel A. Undersaving regret	D	id	Did	not	Ttest	_
Variable	Mean	Std.Err.	Mean	Std.Err.	Diff.	Ttest
Age	70.66	0.32	72.23	0.35	-1.58	***
Female	0.58	0.02	0.55	0.02	0.03	
White	0.79	0.02	0.90	0.01	-0.11	***
Black/African American	0.12	0.02	0.07	0.01	0.05	***
Other race	0.09	0.01	0.03	0.01	0.05	***
Hispanic	0.10	0.02	0.04	0.01	0.06	***
Married	0.56	0.02	0.68	0.02	-0.12	***
Education, <hs< td=""><td>0.13</td><td>0.01</td><td>0.05</td><td>0.01</td><td>0.08</td><td>***</td></hs<>	0.13	0.01	0.05	0.01	0.08	***
Education, HS	0.34	0.02	0.26	0.02	0.08	***
Education, some college	0.27	0.02	0.23	0.02	0.05	*
Education, college+	0.24	0.02	0.47	0.02	-0.22	***
Employment, working	0.22	0.02	0.17	0.02	0.05	
Employment, retired	0.61	0.02	0.73	0.02	-0.12	***
Good health	0.71	0.02	0.87	0.01	-0.16	***
Memory score	10.38	0.16	11.00	0.20	-0.62	**
CESD (depression score)	1.66	0.09	0.85	0.08	0.81	***
HH total wealth in 2018						
(\$2020)/1000	290.34	24.60	1,796.61	349.24	-1,506.27	***
HH total income in 2018	(())	2.01	111 50	0.07	44.05	***
(\$2020)/1000	66.80	3.91	111.76	8.27	-44.95	
Financial planning horizon	3.14	0.06	3.54	0.05	-0.40	***
SLE_LE	-0.09	0.02	0.01	0.01	-0.09	***
SubpopN	905					

Online Appendix Table 1. Differences in Characteristics of Persons who Did/Did Not Regret

		1		1		
Panel B. LTC regret	D	id	Did	not	Ttest	t
Variable	Mean	Std.Err.	Mean	Std.Err.	Diff.	Ttest
Age	71.45	0.41	71.36	0.33	0.09	
Female	0.63	0.02	0.53	0.02	0.11	***
White	0.72	0.03	0.90	0.01	-0.19	***
Black/African American	0.19	0.02	0.06	0.01	0.13	***
Other race	0.10	0.02	0.04	0.01	0.05	**
Hispanic	0.10	0.02	0.06	0.01	0.04	***
Married	0.52	0.03	0.66	0.02	-0.14	***
Education, <hs< td=""><td>0.16</td><td>0.02</td><td>0.06</td><td>0.01</td><td>0.09</td><td>***</td></hs<>	0.16	0.02	0.06	0.01	0.09	***
Education, HS	0.33	0.03	0.29	0.02	0.04	
Education, some college	0.24	0.02	0.26	0.02	-0.01	
Education, college+	0.27	0.03	0.39	0.02	-0.11	***
Employment, working	0.19	0.02	0.20	0.02	-0.01	
Employment, retired	0.64	0.03	0.69	0.02	-0.05	
Good health	0.72	0.02	0.83	0.02	-0.11	***
Memory score	10.14	0.20	10.92	0.16	-0.78	***
CESD (depression score)	1.61	0.12	1.11	0.07	0.50	***
HH total wealth in 2018						
(\$2020)/1000	529.63	79.23	1,247.21	243.77	-717.57	***
HH total income in 2018	(0.00	5.0.4	07.04		07.44	***
(\$2020)/1000	69.90	5.34	97.34	6.75	-27.44	
Financial planning horizon	3.20	0.07	3.40	0.05	-0.20	**
SLE_LE	-0.06	0.02	-0.03	0.01	-0.03	
SubpopN	649		961			

anel C. Lifetime income regret	D	id	Did	not	Ttest	t
/ariable	Mean	Std.Err.	Mean	Std.Err.	Diff.	Ttest
Age	71.37	0.36	71.42	0.33	-0.05	
Semale	0.64	0.03	0.54	0.02	0.11	***
Vhite	0.67	0.04	0.90	0.01	-0.23	***
Black/African American	0.22	0.03	0.06	0.01	0.17	***
Other race	0.11	0.02	0.05	0.01	0.06	***
Iispanic	0.14	0.03	0.05	0.01	0.09	***
<i>Aarried</i>	0.49	0.03	0.66	0.02	-0.17	***
Education, <hs< td=""><td>0.16</td><td>0.02</td><td>0.07</td><td>0.01</td><td>0.09</td><td>***</td></hs<>	0.16	0.02	0.07	0.01	0.09	***
Education, HS	0.38	0.03	0.27	0.02	0.11	***
Education, some college	0.26	0.03	0.25	0.02	0.01	
Education, college+	0.19	0.03	0.40	0.02	-0.21	***
Employment, working	0.19	0.02	0.20	0.02	0.00	
Employment, retired	0.62	0.03	0.69	0.02	-0.07	*
bood health	0.67	0.03	0.83	0.01	-0.16	***
Aemory score	9.84	0.20	10.95	0.16	-1.11	***
ESD (depression score) IH total wealth in 2018	1.77	0.12	1.11	0.08	0.66	***
\$2020)/1000 IH total income in 2018	431.18	94.25	1,209.73	226.81	-778.55	***
\$2020)/1000	64.37	5.04	96.58	6.63	-32.21	***
inancial planning horizon	3.15	0.08	3.40	0.05	-0.25	***
SLE LE	-0.06	0.01	-0.03	0.01	-0.03	
SubpopN	527		1,083			

i manetai plaining norizon	0.110	0.00	20	0.00	0.20	
SLE LE	-0.06	0.01	-0.03	0.01	-0.03	
SubpopN	527		1,083			
Panel D. Financial dependence						
regret	D	id	Did	not	Ttest	t
Variable	Mean	Std.Err.	Mean	Std.Err.	Diff.	Ttest
Age	68.98	0.63	71.64	0.29	-2.66	***
Female	0.69	0.04	0.55	0.02	0.14	***
White	0.83	0.04	0.84	0.01	-0.02	
Black/African American	0.10	0.02	0.10	0.01	0.00	
Other race	0.08	0.03	0.06	0.01	0.02	
Hispanic	0.11	0.02	0.07	0.01	0.04	
Married	0.75	0.04	0.60	0.02	0.15	***
Education, <hs< td=""><td>0.15</td><td>0.03</td><td>0.09</td><td>0.01</td><td>0.06</td><td>*</td></hs<>	0.15	0.03	0.09	0.01	0.06	*
Education, HS	0.38	0.05	0.29	0.02	0.09	*
Education, some college	0.27	0.05	0.25	0.02	0.02	
Education, college+	0.19	0.04	0.37	0.02	-0.18	***
Employment, working	0.15	0.04	0.20	0.02	-0.05	
Employment, retired	0.59	0.06	0.68	0.02	-0.09	
Good health	0.70	0.05	0.80	0.01	-0.10	*
Memory score	10.55	0.31	10.68	0.15	-0.12	
CESD (depression score)	1.78	0.21	1.23	0.08	0.55	**
HH total wealth in 2018						
(\$2020)/1000	347.54	43.23	1,072.65	183.52	-725.11	***
HH total income in 2018	05.05	12.40	00.20	5 20	2.54	
(\$2020)/1000	85.85	13.40	88.39	5.30	-2.54	**
Financial planning horizon	2.97	0.17	3.37	0.04	-0.40	**
SLE_LE	-0.12	0.03	-0.03	0.01	-0.08	ጥጥ
SubpopN	157		1,454			

Panel E. Social Security early claim

Panel E. Social Security early claim regret		oid	Did	not	Ttes	t
Variable	Mean	Std.Err.	Mean	Std.Err.	Diff.	Ttest
Age	73.29	0.38	70.96	0.30	2.33	***
Female	0.52	0.03	0.57	0.02	-0.05	
White	0.75	0.03	0.86	0.01	-0.12	***
Black/African American	0.15	0.03	0.09	0.01	0.07	***
Other race	0.10	0.02	0.05	0.01	0.05	**
Hispanic	0.12	0.03	0.06	0.01	0.06	*
Married	0.55	0.03	0.63	0.02	-0.08	**
Education, <hs< td=""><td>0.14</td><td>0.02</td><td>0.08</td><td>0.01</td><td>0.05</td><td>**</td></hs<>	0.14	0.02	0.08	0.01	0.05	**
Education, HS	0.30	0.04	0.30	0.02	0.00	
Education, some college	0.30	0.03	0.24	0.02	0.06	
Education, college+	0.27	0.03	0.37	0.02	-0.10	***
Employment, working	0.12	0.03	0.22	0.02	-0.10	***
Employment, retired	0.72	0.03	0.66	0.02	0.06	*
Good health	0.71	0.03	0.81	0.01	-0.10	***
Memory score	9.97	0.28	10.84	0.14	-0.87	***
CESD (depression score) HH total wealth in 2018	1.74	0.11	1.17	0.07	0.57	***
(\$2020)/1000	656.66	141.50	1,092.99	205.50	-436.33	*
HH total income in 2018			· ·			
(\$2020)/1000	66.24	6.92	93.51	5.79	-27.27	***
Financial planning horizon	3.21	0.10	3.37	0.04	-0.16	
SLE_LE	-0.03	0.02	-0.04	0.01	0.02	
SubpopN	362		1,249			

Panel F. Quit work too soon regret	Ι	Did	Di	d not	Ttes	st
Variable	Mean	Std.Err.	Mean	Std.Err.	Diff.	Ttest
Age	72.25	0.35	73.42	0.45	-1.17	**
Female	0.64	0.04	0.56	0.02	0.08	*
White	0.78	0.03	0.88	0.01	-0.11	***
Black/African American	0.13	0.02	0.08	0.01	0.06	***
Other race	0.09	0.02	0.04	0.01	0.05	**
Hispanic	0.11	0.03	0.05	0.01	0.06	**
Married	0.53	0.03	0.65	0.02	-0.12	***
Education, <hs< td=""><td>0.15</td><td>0.02</td><td>0.07</td><td>0.01</td><td>0.08</td><td>***</td></hs<>	0.15	0.02	0.07	0.01	0.08	***
Education, HS	0.35	0.04	0.32	0.02	0.02	
Education, some college	0.30	0.03	0.24	0.02	0.05	
Education, college+	0.21	0.02	0.36	0.03	-0.16	***
Employment, working	0.00		0.01	0.01	-0.01	**
Employment, retired	0.80	0.03	0.90	0.01	-0.09	***
Good health	0.67	0.03	0.79	0.02	-0.12	***
Memory score	9.82	0.24	10.73	0.18	-0.91	***
CESD (depression score)	1.77	0.12	1.17	0.09	0.60	***
HH total wealth in 2018						
(\$2020)/1000	436	47	1,040	96	-604	***
HH total income in 2018						
(\$2020)/1000	57.87	5.20	85.99	6.68	-28.12	***
Financial planning horizon	3.22	0.11	3.37	0.05	-0.15	
SLE_LE	-0.10	0.02	0.00	0.02	-0.10	***
SubpopN	401		717			

SubpopN401717Notes: * p<0.10, ** p<0.05, *** p<0.01. All data weighted; for variable definitions, see text.</td>