Discussion Paper Series

IZA DP No. 18863

August 2026

Longevity Beliefs and Retirement Planning: Evidence from an Information Experiment and Expert Forecasts

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IZA@LISER NETWORK
ISSN: 2365-9793

IZA DP No. 18863 August 2026

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Abstract

Using original survey data from working-age individuals in Northern Italy, we study longevity beliefs and other key knowledge components relevant for retirement decisions. We find substantial dispersion in population longevity beliefs, with 40% of individuals misestimating life expectancy by more than five years, and highly fragmented knowledge across domains. Providing actuarial life expectancy information – tailored by age, gender, and county of residence – does not affect beliefs about individuals' own longevity or retirement plans, reflecting a disconnect between beliefs about one's own longevity and that of others. We compare our results with forecasts provided by 262 academic experts. On average, experts accurately anticipate the levels and correlations of longevity literacy with other knowledge components, but they mispredict a strong updating response of own longevity expectations to the provision of population information that deviates markedly from what we observe in the data.

JEL classification

D83, J26, D15, G50

Keywords

subjective longevity, expert forecasts, financial literacy, retirement

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* *Acknowledgements*: The study of individuals' retirement life-cycle knowledge and the corresponding expert forecast study are both registered in the AEA RCT Registry (AEARCTR-0012807 and AEARCTR-0017251, respectively). The project received IRB approval from ETH Zurich Ethics Commission (Project 25 ETHICS-233). Refine.ink was used to check the paper for consistency and clarity. The survey of individuals was conducted as part of the study "The Economic-Financial Heritage of Trentino-Alto Adige: Protection, Enhancement, and Improvement of Economic-Financial Literacy among Citizens", funded by Pensplan Centrum S.p.A. Francesco Nicolini has been funded by the European Social Fund Plus, Project code ESF2_f3_0005, CUP: B56F24000100001, Research projects on strategic topics for South Tyrolean economy executed by research assistants (AR).

I. Introduction

Longevity beliefs have a substantial influence on individuals' intertemporal decisions and behaviors, directly affecting how much they consume, how they invest their savings, and when they plan to retire (Puri and Robinson, 2007; Hurd, Smith and Zissimopoulos, 2004; Van Solinge and Henkens, 2010; Gan et al., 2015; Chen, Hieber and Rach, 2021). Despite their central role in life-cycle behavior, relatively little is known about how individuals form expectations about their own lifespan (see Hamermesh, 1985, for a seminal discussion).

Standard life-cycle retirement models assume that individuals take decisions by combining, among other things, longevity expectations with financial and pension knowledge, including retirement eligibility and expected pension benefits, as well as an understanding of interest compounding, inflation, risk diversification, and so on (see Gomes, Haliassos and Ramadorai, 2021, for a review of these models). These knowledge components have become increasingly important given the global transition from defined benefit to defined contribution pension plans, which has shifted responsibility for managing longevity risk, investment volatility, and inflation onto individual households.[1] While recent studies show that incorporating individuals' subjective survival probabilities (e.g., de Bresser, 2024; Heimer, Myrseth and Schoenle, 2019) and financial knowledge (e.g., Lusardi, Michaud and Mitchell, 2017) improves the predictions of life-cycle retirement models, whether individuals possess these inputs in an integrated way remains largely unknown, as existing research has primarily examined these dimensions in isolation.

In this paper, we study longevity literacy, how it relates to other knowledge components individuals need to possess in order to make sound financial decisions over the life cycle, as well as its relation with one's own longevity expectations. Moreover, we examine whether individuals' own longevity expectations can be updated by providing actuarial life expectancy information, and whether such updating translates into changes in pension-related behaviors. In addition, we elicit forecasts from academic experts about individuals' knowledge of longevity (as well as pension and financial concepts) and about the effects of providing population longevity information on individuals' own longevity expectations. These forecasts capture current academic beliefs and allow us to assess how and to what extent the results diverge from them.

We recruit 1,000 working-age individuals in Northern Italy and elicit their beliefs about the longevity of individuals similar to themselves (i.e., population longevity beliefs), as well as their understanding of key features of the public pension system and their knowledge of basic financial concepts. Asking individuals to predict the average lifespan of similar individuals not only enables an objective assessment of general longevity literacy, but also allows us to later examine how beliefs about others' longevity relate to individuals' own longevity beliefs.

We then implement a randomized information treatment that provides a subset of respon-

[1] This shift is particularly pronounced in countries where individuals can withdraw the full balance of their second- and third-pillar pension funds (e.g., Australia, Switzerland, the United Kingdom, and the United States) or opt for fixed-term annuities (e.g., Canada, Italy, Sweden), increasing their exposure to longevity risk significantly.

dents with official actuarial life expectancy estimates tailored to their age, gender, and place of residence (at the county level). This intervention allows us to test whether population-level information affects own longevity expectations and, consequently, retirement planning.

We present three main findings. First, beliefs about population longevity are relatively accurate on average, with a modest pessimistic bias of 2.4 years, but display substantial dispersion: 32% of respondents underestimate longevity by more than 5 years, while 8% overestimate it by more than 5 years. Notably, females underestimate life expectancy by over three years, potentially leading to undersaving. Second, knowledge relevant for life-cycle decisions is highly fragmented: pension and financial literacy are weakly positively correlated but they both remain completely uncorrelated with longevity literacy, indicating that individuals rarely possess a comprehensive understanding of the components required for optimal retirement planning. Third, providing actuarial information about population longevity has virtually no effect on individuals' own longevity expectations or retirement-related choices. This is true even among respondents with large initial biases in population longevity beliefs and appears to reflect the perceived irrelevance of population longevity for personal survival expectations.

In the second stage of this project, we elicit the beliefs of 262 academic experts regarding the knowledge individuals possess and the effectiveness of the information treatment. We survey researchers in the fields of retirement, aging, and longevity. We provide experts with specific profiles constructed from the individuals' survey data and then ask them to forecast respondents' levels of knowledge in each component, their own longevity expectations, as well as the effectiveness of the information treatment across different initial population longevity biases. While experts demonstrate a strong understanding of the generally low levels of literacy and the weak correlation across its different components, they expect actuarial life expectancy information to affect respondents' own longevity expectations, substantially mispredicting the actual pattern.

In particular, experts predict a negative population longevity bias of -1.84 years (vs. -2.4 years in the actual data), an average predicted probability of 0.39 of answering correctly in the pension knowledge module (vs. 0.26), and 0.45 in the financial literacy module (vs. 0.41). Moreover, we show that predictions generated by the panel of experts reflect the fragmented nature of knowledge domains observed in the data: forecasts imply correlations of -0.05 between longevity and financial literacy (vs. -0.05), 0.06 between pension and longevity literacy (vs. 0.00), and 0.20 between financial and pension literacy (vs. 0.29).

At the same time, however, experts substantially mispredict the effect of the information treatment. In the full sample, which exhibits an average population longevity bias of -2.41 years, experts predict that individuals would increase their own longevity estimates by about 2 years when informed, whereas we observe no change. Notably, these mispredictions do not vary with experts' field of research or seniority.

Finally, we explore in more detail the relationship between expectations about one's own longevity and that of similar others. First, individuals display a striking optimism gap in their own longevity expectations. While 21% of respondents believe that similar others will die before age 80, only 1% expect to die themselves before that age. Second, consistent with this asymmetry, beliefs about one's own longevity and that of similar others are essentially uncorrelated ($\rho = 0.09$). This disconnect is particularly pronounced among respondents who believe that similar others die before age 80, for whom the correlation is even closer to zero ($\rho_{<80} = -0.03$).[2] In contrast, academic experts assume a strong positive correlation ($\rho = 0.63$) between individuals' beliefs about their own longevity and that of others. This pattern helps explain the mismatch between the results of the information experiment and the effects predicted by experts.

Our findings relate to the literature on subjective longevity beliefs, particularly their effects on retirement decisions. Since Hamermesh (1985), different studies have documented the importance of subjective longevity beliefs for understanding retirement and saving decisions over the life cycle. Three main features set our study apart.

First, we focus on the relationship between individuals' beliefs about their own longevity and that of similar others. A plausible hypothesis is that subjective longevity expectations capture two distinct components: beliefs about the distribution of population longevity and beliefs about one's own relative position within that distribution. This would imply that subjective longevity expectations are malleable through the provision of information on population longevity, with potentially important policy implications. Alternatively, subjective longevity expectations may be unrelated to population longevity and, thus, providing information on the latter would not have any impact. Yet, the relationship between one's own longevity beliefs and population longevity beliefs remains largely unexplored.

Given that we examine how individuals change expectations about their own longevity, retirement age, and other pension-related outcomes when provided with information on life expectancy, this places our study close to the literature – primarily in the context of income and health outcomes – on the update of subjective expectations in response to information provision (e.g., Cruces, Perez-Truglia and Tetaz, 2013; Wiswall and Zafar, 2015*b*; Ciancio et al., 2024).

Moreover, much of the literature on longevity expectations has focused on subjective survival probabilities. As discussed in Hurd 2009; Hudomiet, Hurd and Rohwedder 2023, researchers may encounter several methodological issues when analyzing such estimates, including measurement error, focal responses, and overreporting of small probabilities. In this study, we instead elicit lifespan expectations with the aim of reducing complexity and, consequently, measurement error. This allows us to show that age-specific distortions do not arise under this alternative elicitation format, suggesting that the age-specific distortions frequently observed in subjective survival probabilities (i.e., the so-called "flatness bias") may be an artifact of the elicitation method.[3]

[2] Among individuals who believe that similar others will live beyond age 80, the correlation between own longevity beliefs and beliefs about others' longevity is $\rho_{>80} = 0.22$.

[3] Subjective survival probabilities are often elicited by asking respondents about their chances of reaching target ages that vary with the respondent's current age (e.g., in the Health and Retirement Study). This age-dependent elicitation may induce systematic age-specific distortions in subjective survival probability estimates (Hudomiet, Hurd and Rohwedder, 2023), resulting in survival curves that are flatter than the objective survival curve, the so-called "flatness bias". Our age-invariant elicitation mitigates these biases.

Second, we study how integrated longevity literacy is with other knowledge components, such as pension and financial literacy, influencing life-cycle choices. While many studies have analyzed these knowledge components in isolation (see Lusardi and Mitchell, 2023; Hudomiet, Hurd and Rohwedder, 2023, for recent reviews), the extent to which these key dimensions are integrated remains largely understudied.[4]

Third, we compare observed longevity beliefs, individuals' overall literacy, and the effectiveness of the longevity information intervention with expert predictions, thus assessing the novelty and potential impact of our results. The relevance of expert forecasts in this article connects it to the still-limited literature on forecasting research results. Following DellaVigna and Pope (2018); DellaVigna, Pope and Vivalt (2019), we elicit and document the beliefs of academic experts on this topic. This exercise clarifies why researchers expect self-beliefs to be revised following an information intervention, even though this is often not the case (e.g., Ciancio et al., 2024).

The remainder of the paper is structured as follows. Section II presents a simple conceptual framework that clarifies the role of different knowledge components in life-cycle decision-making and formalizes belief updating in response to information about longevity. Section III describes the survey design, data collection, and information experiment. Section IV documents patterns of longevity, pension, and financial literacy, both separately and jointly. Section V analyzes how one's own longevity beliefs and retirement outcomes respond to actuarial life expectancy information. Section VI compares our empirical findings with ex ante predictions from academic experts. Section VII discusses how individuals reason about their own and others' longevity, and Section VIII concludes.

II. Conceptual Framework

Here, we illustrate how longevity beliefs, together with other knowledge components such as pension and financial literacy, can influence individuals' choices in a standard life-cycle retirement model. We also discuss why providing information about life expectancy in the general population may lead individuals to update their own longevity beliefs. Both the life-cycle and updating frameworks are kept as simple as possible while still allowing us to frame the survey design and interpret the empirical findings.

[4]Research on pension literacy is more fragmented, largely reflecting the country-specific institutional features of pension systems. Mitchell (1988) is among the first studies to analyze pension knowledge. She compares workers' self-reports of pension provisions (plan type, contribution rules, and retirement requirements) with administrative records and finds that misinformation is widespread. Chan and Stevens (2008) compare self-reported pension wealth and incentives with employer-reported administrative data and show that only a well-informed minority responds to pension incentives. Mastrobuoni (2011) assess workers' ability to estimate their future Social Security benefits and the precision of those estimates. Landerretche and Martínez (2013) construct a "pension literacy index" based on six questions covering contribution rates, account balances, investment policies, benefit calculation, retirement age, and minimum pension rules. Debets et al. (2022) use both an objective "pension literacy index" (based on correct answers to questions about pension accrual, employer contributions, and inflation indexation) and a subjective measure capturing individuals' perceived level of information. Finally, Boeri et al. (2024) test knowledge of the functioning of pay-as-you-go systems, i.e., how current pensions are funded.

II.A. Household literacy for life-cycle decisions

Consider a standard life-cycle retirement model in which an individual of age a derives utility from consumption and leisure until age at death L. After retirement, the individual receives state pension benefits equal to a fraction of the wage earned while working, αw.

In Appendix B, we develop a simple model, building on Kalemli-Ozcan and Weil (2010), that incorporates these features.[5] Within such a framework, we argue that individuals require literacy in at least three domains to form accurate expectations and make sound life-cycle decisions.

(i) Longevity literacy. Individuals' expectations about their own longevity directly determine the planning horizon of the optimization problem. Our hypothesis is that forming unbiased beliefs about one's own longevity requires combining personal knowledge (e.g., about health status) with general knowledge (e.g., understanding of population longevity).

(ii) Pension literacy. Expectations about future state pension benefits, as well as knowledge of the minimum retirement age, significantly influence the optimal retirement age and consumption path. Forming accurate expectations about social security benefits and retirement eligibility requires a sound understanding of pension institutions.

(iii) Financial literacy. Intertemporal choices depend on individuals' familiarity with concepts such as interest compounding and inflation, two central components of financial literacy.

Within the same framework (see Appendix B, Section III), we show that errors in longevity beliefs can significantly reduce lifetime utility and that, in the presence of a state pension, overly optimistic individuals may incur larger welfare losses than pessimistic individuals. The reason is that pessimistic individuals continue to receive state pension benefits after exhausting their assets, so their welfare losses arise primarily from imperfect consumption smoothing, whereas optimistic individuals die with unspent assets and therefore forgo consumption that could have increased their lifetime utility.

II.B. Updating longevity beliefs

We introduce a simple model of belief updating to illustrate how our information experiment may lead individuals to change their own longevity expectations. The updating framework follows the model used in Wiswall and Zafar (2015*b*) for earnings expectations.

[5] We propose a continuous life-cycle framework based on Kalemli-Ozcan and Weil (2010). Relative to that model, we introduce two main modifications. First, we formulate the optimization problem from the perspective of the individual's current age a, rather than over the entire life cycle. This allows us to capture heterogeneous adjustments in consumption paths and optimal retirement age in response to changes in longevity beliefs, depending on the respondent's age. Second, we introduce social security benefits, set as a fraction α of labor income, highlighting the role of public pensions in the life-cycle optimization problem.

Individuals can form expectations about their own longevity (L) using both *population information*, such as their perceptions of the population distribution of life expectancy, and *self-information*, such as their perceived health status. Assume, for simplicity, that an individual's information set (Ω) consists of expectations about population longevity (L^{pop}) and other relevant inputs (ω), such that

$$L = f(\Omega), \qquad \text{where} \quad \Omega = \{L^{pop}, \omega\}.$$

In our study design, we first ask all respondents about their beliefs regarding population longevity, and then we introduce a perturbation to the individual's information set (L'^{pop}) – specifically, we provide official actuarial life expectancy estimates – to a randomly selected half of the sample. This allows us to study the linkage between their beliefs about population longevity and their own longevity expectations in an unperturbed state, as well as for those individuals who receive a perturbation in their population beliefs.

As in Wiswall and Zafar (2015*b*), individuals update their own longevity expectations if two conditions hold: the information we provide in our experiment is *new* and *credible*, and the information is *relevant*.

CONDITION 1. The information received is *new* and *credible* if $L'^{pop} \neq L^{pop}$, and therefore, $\Omega' = \left\{L'^{pop}, \omega\right\}$ differs from Ω. Some individuals may already hold unbiased beliefs about population longevity and, therefore, may not update their information set upon receiving actuarial figures. Other individuals may instead hold biased beliefs, in which case the information we provide constitutes *new* information for them. It is also necessary that individuals perceive the information we provide as *credible*, rather than entirely untrustworthy, in order to revise their information set. To enhance the credibility of the information provided, respondents are informed that the reported figures are estimated by the National Statistical Office.

CONDITION 2. The information treatment is *relevant* if $f(\Omega') \neq f(\Omega)$, where $\Omega' = \left\{L'^{pop}, \omega\right\}$ and $L'^{pop} \neq L^{pop}$. Since the type of information we update needs to be *relevant* for forming expectations, both the elicited population longevity expectations and the provided actuarial life expectancy are tailored to the respondent's age, gender, and county of residence rather than to the general population.

If conditions 1 and 2 hold, then the respondent updates their own expectations: $L' \neq L$. Both conditions need to hold in order to observe an update. In our context, the goal is to verify whether information about population life expectancy is new and perceived as relevant for individuals' beliefs about their own age at death and – if so – to examine how a perturbation in beliefs about population longevity ($L'^{pop} - L^{pop}$) translates into:

(i) a change in their own longevity expectations ($L' - L$),

(ii) changes in pension-related outcomes ($Y' - Y$) that depend on own longevity perception.

For instance, decisions such as when to retire or whether to participate in a complementary pension scheme depend directly on the length of the period they expect to finance after retirement, and thus on when individuals believe they will die.[6]

III. Survey Design and Data

III.A. Data collection and final sample

The data come from a survey conducted in February 2024 among 25–60-year-olds living in Trentino-South Tyrol, a region in northeastern Italy. The sample consists of 1,000 individuals.[7] The survey was conducted by the commercial survey company SWG (`https://www.swg.it/home-en`).

1. Data Collection. The survey company randomly selected individuals from a pool of eligible respondents and conducted interviews using Computer-Assisted Telephone Interviewing (CATI).[8] Appendix C describes the methodology followed by the survey company to ensure quality responses and to check for data quality.

2. Final Sample. Table 1 reports summary statistics for the full sample and for the treated and control groups in the information experiment providing respondents with their actuarial life expectancy. Due to its proximity to Austria and its strong German cultural influence, the region exhibits education and labor market outcomes more closely aligned with the EU than with the rest of Italy.[9] The share of college-educated individuals in the sample (33%) is slightly below the EU average (37% in 2023), while the total employment rate (79%, including both employees and self-employed workers) is slightly above the EU average (75% in 2023). The sample, consisting of individuals aged 25-60, exhibits an average actuarial life expectancy of nearly 85 years, similar to the Italian values. The randomization appears successful: treated and control groups are balanced not only on the targeted characteristics (gender and county of residence), but also on almost all other observable characteristics.

[6]Within the framework developed in Appendix B, we estimate the response of the optimal retirement age to changes in longevity expectations (dR/dL) using individual data of our sample. The model predicts an average effect of longevity belief revisions on retirement age of 0.43, implying that a one-year increase in expected longevity raises the retirement age by approximately five months.

[7]The sample is designed to be representative of the reference population of the Trentino-South Tyrol counties. The sampling plan is based on the following characteristics: gender, age group, county of residence (with 50% of respondents from each of the two counties), employment status, and primary language.

[8]CATI surveys have several advantages: (i) they reduce the selection bias of in-person surveys based on who is available to respond during regular working hours, (ii) they allow surveyors to reach older respondents who are otherwise difficult to reach (e.g., they may have difficulty participating in an online survey or may be afraid to open their door to strangers), and (iii) they ensure higher quality output (compared to in-person surveys) due to standardized systems and enforced quality control checks.

[9]Trentino–South Tyrol has a strong Austrian–German influence (almost one-third of the population has German as their mother tongue) and the highest regional GDP per capita in Italy. In the main analysis, we control for affiliation with the linguistic minority to account for potential cultural differences among individuals.

TABLE 1

DESCRIPTIVE STATISTISTICS

	Full Sample	Information treatment: Actuarial LE		
		T	C	T-test p-value
	(1)	(2)	(3)	(4)
Female	0.500	0.499	0.501	0.950
25–34 years old	0.236	0.232	0.240	0.739
35–44 years old	0.254	0.253	0.255	0.971
45–60 years old	0.510	0.515	0.505	0.753
Married	0.434	0.423	0.445	0.489
Childless	0.318	0.311	0.325	0.653
College degree	0.325	0.327	0.323	0.874
Employee	0.601	0.595	0.607	0.689
Self-employed	0.188	0.192	0.184	0.770
Low income	0.348	0.355	0.341	0.628
Medium income	0.584	0.571	0.597	0.399
High income	0.068	0.074	0.062	0.462
High wealth	0.192	0.214	0.170	0.083
Low health	0.091	0.106	0.076	0.103
Medium health	0.699	0.681	0.717	0.205
High health	0.210	0.214	0.206	0.781
Financial Literacy	0.411	0.413	0.409	0.862
Pension Literacy	0.257	0.251	0.262	0.604
Population longevity beliefs	82.4	82.3	82.4	0.809
Actuarial life expectancy	84.8	84.8	84.8	0.876
Sample size	1000	501	499	

Notes: This table displays the characteristics of the full sample in column (1), the treated and control groups in the information experiment in columns (2) and (3), respectively, and in column (4) the p-value of the difference between columns (2) and (3). The indicator for *employee* takes the value of 1 if the respondent is employed but not self-employed; *low income* is an indicator for having a total net income lower than €15,000 and *high income* if higher than €40,000, *high wealth* takes the value of 1 if the respondent owns real estate property and reports having no outstanding debt; *low health* is an indicator for having reported a self-assessed health status strictly lower than 3 out of 5 and *high health* if strictly higher than 3.

III.B. THE SURVEY STRUCTURE

The complete questionnaire is available in Appendix D. This section offers details on its main components.

1. SOCIOECONOMIC BACKGROUND. We collected information on the respondent's gender, age, highest level of education achieved, marital status, number of children, and place of residence. In addition, we asked several questions about employment status, income, and wealth, including wage and other sources of income, work experience, sector of employment, type of employment contract, real estate properties, mortgages, but also the share of income devoted to expenditure and saving. Because of the crucial role it plays in life-cycle behavior, we also asked respondents about their health status.

2. Knowledge. These questions are about factual knowledge. We examine respondents' knowledge of three important factors influencing life-cycle behavior: longevity, pension, and financial literacy. Longevity literacy is assessed by respondents' ability to accurately predict the life expectancy of similar individuals (i.e., with the same gender, age, and county of residence of the respondent). Pension-specific knowledge is assessed by testing individuals' understanding of how state pension benefits are calculated and how the public pension system is financed. Following Lusardi and Mitchell (2011*a*,*b*), financial literacy is evaluated using three questions on the fundamental concepts of interest compounding, inflation, and risk diversification. The exact questions in each domain are reported in Figure A.1 in the Appendix.

3. The Information Treatment: Actuarial Life Expectancy. A randomly selected subsample of respondents was provided by the interviewer with official information about the previously elicited life expectancy (i.e., for individuals with the same gender, age, and county of residence of the respondent).[10]

Conversely, the control group was simply informed that the National Statistical Office calculates life expectancy for individuals based on their gender, age, and county of residence, without providing to them with a numerical actuarial life expectancy estimate.[11]

4. Retirement Planning. In this section, respondents were asked to think about their retirement planning. What will be your retirement age? Do you plan to participate in a complementary pension scheme in the future? How satisfied are you with your retirement planning? To understand their specific engagement with pension and financial literacy, respondents are asked to what extent they are interested in receiving information on these topics through seminars, books, podcasts, TV or radio broadcasts, etc.

5. Own Longevity Beliefs. The last question was about the respondent's own longevity beliefs. In contrast to the previous question, which elicited beliefs about the longevity of similar individuals based on gender, age, and place of residence, this question focuses on respondents' beliefs regarding their own expected age at death. This question is crucial for assessing (i) the relationship between individuals' beliefs about the longevity of similar others and their own longevity expectations, and (ii) the potential transmission of the information treatment to the respondent. Specifically, it allows us to examine whether the official actuarial information is

[10]Question to the treated group: *Based on the latest available data, the National Statistical Office estimates that the average life expectancy (i.e., age at death) for a* [respondent's age] *years-old* [respondent's gender] *living in* [respondent's county] *is* [official life expectancy specific to the the respondent's gender, age and county of residence]. *Do you think this information is relevant to you?*

[11]Question to the control group: *Based on the latest available data, the National Statistical Office provides estimates of average life expectancy (i.e., age at death) by gender, age, and county of residence. Do you think this information is relevant to you?*

internalized and, if so, whether it could subsequently influence individual life-cycle behavior.[12]

IV. Knowledge Influencing Life-Cycle Behavior

This section presents the main findings on households' knowledge of key factors influencing life-cycle behavior. As discussed earlier, individuals' life-cycle utility depends not only on how accurate expectations about their lifespan are, but also on other factors such as the accuracy of their expected pension benefits (i.e., pension literacy) and their understanding of intertemporal choices (i.e., financial literacy).

IV.A. Longevity literacy

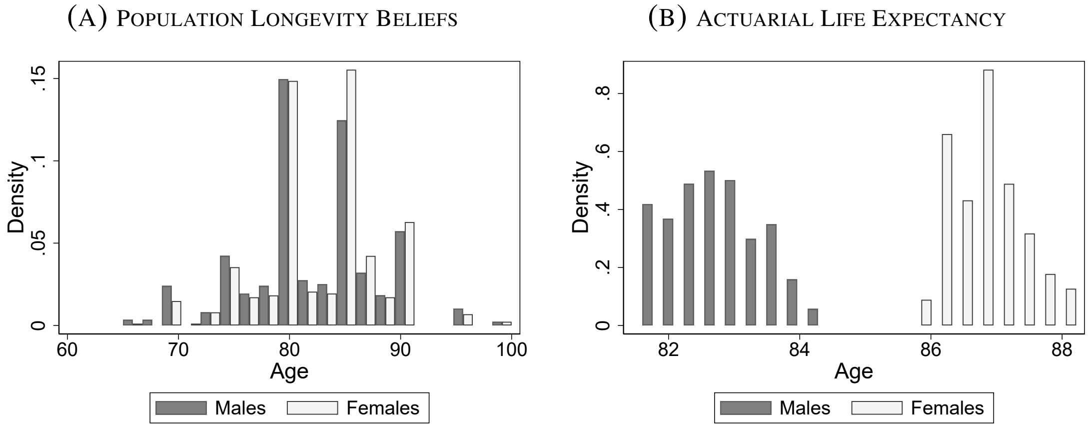
We assess longevity literacy by asking respondents to estimate the life expectancy of individuals similar to themselves in terms of age, gender, and place of residence, and then compare these expectations with the actuarial estimates computed by the National Statistical Office for the same reference group.

Asking about population longevity offers several advantages. First, it enables the objective measurement of longevity knowledge without invoking personal circumstances or emotionally charged considerations. Since the question pertains to the average life expectancy of a well-defined reference group rather than to the individual respondent, deviations from actuarial estimates can be interpreted as individual biases rather than reflections of unique personal situations. Second, this method preserves the opportunity to later investigate how beliefs about others' longevity relate to subjective expectations about their own longevity. This distinction is important from a policy perspective, as it may help uncover how people internalize official life expectancy figures when making life-cycle decisions. Finally, eliciting longevity beliefs using point estimates rather than probabilistic measures limits the anchoring and avoids probability-specific focal-point issues that often arise in the elicitation of survival probabilities (Manski and Molinari, 2010; Hudomiet, Hurd and Rohwedder, 2023), while yielding similar associations with respondents' characteristics (Rappange, van Exel and Brouwer, 2017).

When it comes to longevity beliefs, respondents are relatively accurate in estimating the average life expectancy of individuals similar to themselves in terms of age, gender, and county of residence (similar to Hamermesh, 1985). On average, respondents predict population life expectancy to be 82 years and 4 months, versus an official actuarial estimate of 84 years and 9 months, implying an average pessimistic bias of 2.4 years. However, despite the relatively accurate average, the distribution of respondents' perceptions reveals that a substantial share of individuals hold significant biases. More than 32% of respondents underestimate – and 8% overestimate – official figures by more than five years. Figure 1a illustrates the distribution

[12] Avoiding repeated questions on population longevity and instead directly focusing on the internalization of general information through a closely related question (i.e., own longevity beliefs) mitigates several concerns highlighted by Stantcheva (2023), including consistency pressures, social desirability bias, and respondent burden.

FIGURE 1



Notes: The left panel displays the probability density functions (PDFs) of males' and females' population longevity beliefs. The right panel displays the PDFs of males' and females' actuarial life expectancy.

of respondents' beliefs about the life expectancy of similar individuals by gender. Males and females display broadly similar patterns, with both distributions exhibiting noticeable peaks at rounded numbers, typically multiples of five years. Figure 1b presents the distribution of the corresponding actuarial life expectancy values, also by gender. In contrast to perceived life expectancy, the distributions of the actuarial estimates for males and females in our sample do not overlap, with a difference in the means of four years, and are considerably narrower, each spanning a range of only two years.

Column (1) of Table 2 presents regression results for the deviation of respondents' longevity beliefs from actuarial estimates on the respondent characteristics.[13] Female respondents underestimate their average longevity by more than three years, displaying perceptions similar to those of males despite having significantly higher actual life expectancies. This underestimation of longevity may further exacerbate women's retirement conditions by contributing to undersaving, on top of the well-documented gender pension gap (Ponthieux and Meurs, 2015).[14] College-educated individuals tend to report higher population life expectancy beliefs, whereas individuals with lower incomes tend to expect shorter lifespans. These biases in longevity beliefs – despite the question referring to the general population rather than personal circumstances – likely reflect extrapolation from individuals' reference groups, capturing both the higher health risks associated with lower-income occupations and the greater longevity associated with a college degree.

[13]For clarity, the table displays coefficients only for the characteristics showing the greatest heterogeneity. Table A.1 in the Appendix reports the full set of covariate coefficients.

[14]The gender pension gap reflects inequalities in working life. In most Western countries, public pension benefits are calculated using unisex life tables, which redistribute resources from individuals with lower life expectancy (on average, men) to those expected to live longer (on average, women). The main concern therefore lies in women's private, non-annuitized pension savings, which may not be calibrated to their actual longevity if their retirement planning is based on biased longevity beliefs.

TABLE 2
KNOWLEDGE OF INDIVIDUAL COMPONENTS

Domain:	Longevity	Pension		Financial		
	Beliefs Bias	Benefits Calculation	System Financing	Interest Rate	Inflation	Risk Divers.
	(1)	(2)	(3)	(4)	(5)	(6)
Female	-3.34***	-0.04	0.01	-0.04	-0.03	0.05
	(0.35)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age	-0.10	-0.00	0.01	0.01	0.03*	0.03*
	(0.17)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Age squared/100	0.09	0.00	-0.01	-0.02	-0.03*	-0.03*
	(0.19)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
College degree	0.78*	0.04	0.01	0.07*	0.09**	0.06*
	(0.40)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
Employee	-0.21	0.09**	0.01	0.13***	-0.05	-0.10**
	(0.51)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)
Low income	-0.76*	-0.02	0.01	-0.02	-0.02	-0.02
	(0.43)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
High income	-0.58	0.06	0.00	0.08	0.10	0.14**
	(0.83)	(0.07)	(0.05)	(0.07)	(0.07)	(0.07)
High wealth	-0.33	0.14***	-0.02	0.20***	0.09**	0.02
	(0.45)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)
Low health	0.92	-0.17***	-0.02	-0.08*	-0.07	-0.11*
	(0.60)	(0.04)	(0.04)	(0.05)	(0.05)	(0.06)
Descriptive statistics:						
Mean dep. var.	-2.41	0.32	0.20	0.34	0.36	0.53
S.D. dep. var.	5.73	0.47	0.40	0.47	0.48	0.50
Observations	1000	1000	1000	1000	1000	1000

Notes: The dependent variable in column (1) is the deviation (in years) of the respondents' answers from official actuarial estimates. The dependent variables in columns (2) – (6) are 1 when the answer is correct and 0 otherwise. Other controls include indicators for being married, childless, and self-employed, affiliated with language minorities, for the county of residence, for high health status and for living in a rural area. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

IV.B. Pension literacy

Pension-specific knowledge is another key determinant of life-cycle behavior, as it enables individuals to form accurate expectations about their retirement age and post-retirement income. However, measuring general pension knowledge is challenging because its content is closely tied to the institutional rules governing pension systems in each country. Since the purpose of this section is to assess respondents' knowledge, the analysis focuses on two key aspects of the current Italian pension system that do not depend on personal circumstances: the methodology used to calculate future state pension benefits (i.e., contribution-based, earnings-based or mixed systems) and the mechanism through which these benefits are financed (i.e., pay-as-you-go, fully funded or mixed systems).[15] Correct answers are coded as 1 and 0 otherwise. Each question included the "Don't know" option, allowing respondents to refrain from guessing.

Respondents exhibit significant misunderstanding regarding both the calculation and financing of state pension benefits. Over 35% report not knowing how pension benefits are calculated, and only 32% correctly identify the "contribution-based" system as the mechanism used to determine state pensions. Misunderstandings are even more pronounced when it comes to the financing method. Only 20% of respondents correctly identify the "pay-as-you-go" system, in which current social security contributions are used to finance the pensions of those currently retired.[16] Interestingly, respondents' limited knowledge of the state pension financing system appears to be largely unaffected by observable characteristics (column (3) of Table 2). This suggests a general lack of public understanding rather than gaps confined to specific segments of the population.

IV.C. Financial literacy

Financial literacy is assessed using the standard set of core questions known as the "Big Three" (Lusardi and Mitchell, 2011*a*,*b*), which have been widely validated in recent years as reliable measures of individuals' understanding of basic financial concepts (Kaiser et al., 2026).[17] These simple questions assess general knowledge of the key building blocks necessary for sound financial decision-making in an intertemporal life-cycle context. Specifically, the first question evaluates understanding of compound interest, the second tests knowledge of inflation, and the

[15] Although the minimum retirement age and expected future pension benefits are important components of pension literacy, accurately assessing knowledge in these areas would require not only access to private information on individual contribution histories, but also precise knowledge of future retirement rules and annuity coefficients, which are updated biennially by the National Institute for Social Security (INPS) based on life expectancy.

[16] While the financing method may not directly influence the amount of individual pension benefits, it represents a key factor differentiating state pension systems as it has important implications for their financial sustainability, particularly in light of the growing imbalance between the shrinking base of young working contributors and the expanding population of retirees.

[17] The only differences from the original "Big three" financial literacy questions are: (i) we assess knowledge of compound interest instead of simple interest by providing €110 as a reference point (instead of the standard $102) following the OECD survey (OECD, 2022); and (ii) we omit the "Refuse to say" response option, including only the "Don't know" choice.

third addresses the concept of risk diversification. Table 2 reports the results from the regressions of these three components on the respondents' characteristics, reported in columns (4)-(6).

Overall, respondents demonstrate a limited understanding of even basic financial concepts. Only 34% correctly answered the question on compound interest, and 36% correctly identified the effect of inflation. Individuals with higher levels of education and wealth were more likely to understand these two concepts. Younger respondents tend to lack knowledge about inflation, likely because they had not encountered significant inflation during most of their economic lives until the recent surge in prices. However, 53% of respondents correctly answered the question on risk diversification (column (6)), suggesting a comparatively better grasp of this concept.

IV.D. Who knows more?

When making life-cycle decisions, individuals must integrate understanding across these different domains rather than rely on isolated concepts. To assess respondents' overall knowledge, we employ two measures: an indicator for correctly answering all questions within each knowledge domain, and a set of standardized indices. The indices are constructed in four steps. First, all components are oriented so that higher values consistently represent greater knowledge.[18] Second, each component is standardized using its mean and standard deviation. Third, an equally weighted average of the standardized components is calculated. Finally, this composite score is standardized again. The resulting indices are z-scores, which facilitate interpretation and enable comparability across the different factors.

Table 3 presents coefficient estimates from regressions of the general knowledge measures on respondent characteristics.[19] When analyzing perceptions of longevity, it is also important to consider the error in absolute terms, as both under- and overestimations can lead to suboptimal outcomes, as highlighted by the conceptual framework in Section II. Underestimating longevity may result in financial shortfalls during retirement, while overestimating it can lead to excessive saving and under-consumption over the life cycle. We find that 7% of respondents estimate life expectancy within one year of the official actuarial figures, and that individuals with lower health and higher wealth are less likely to accurately assess the life expectancy of similar individuals (column (1)). Moreover, the standardized index shows that lower precision in estimating peers' life expectancy is not confined to individuals at the extremes of the income and wealth distribution, but is also prevalent among females (column (2)), reflecting their previously documented underestimation of longevity.

Pension literacy appears to be particularly limited. Only 6% of respondents correctly answered both questions on how pension benefits are calculated and how state pensions are financed (column (3)), indicating that misinformation and lack of information are the norm (similar to

[18]For longevity beliefs, we construct a normalized accuracy measure by calculating the absolute deviation of each respondent's belief from the actuarial life expectancy estimate. We subtract this deviation from the maximum observed deviation and divide by the same maximum. The resulting variable ranges from 0 to 1, with 1 indicating perfect accuracy.

[19]See Table A.2 in the Appendix for the full set of the covariate coefficients.

TABLE 3

INTEGRATED KNOWLEDGE OF THE COMPONENTS

Domain:	Longevity		Pension		Financial		Overall
	Precise Estimate	Index	All Correct	Index	All Correct	Index	Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female	0.01	-0.15**	-0.02	-0.05	0.00	-0.02	-0.12*
	(0.02)	(0.06)	(0.02)	(0.06)	(0.02)	(0.06)	(0.06)
Age	-0.01	-0.02	0.01	0.01	0.03***	0.07**	0.03
	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)
Age squared/100	0.01	0.03	-0.01	-0.02	-0.03***	-0.08**	-0.04
	(0.01)	(0.04)	(0.01)	(0.04)	(0.01)	(0.03)	(0.04)
College degree	0.02	0.07	0.03	0.08	0.08***	0.21***	0.19**
	(0.02)	(0.07)	(0.02)	(0.08)	(0.03)	(0.07)	(0.08)
Employee	-0.04	-0.01	-0.02	0.16*	0.00	-0.01	0.08
	(0.03)	(0.10)	(0.02)	(0.09)	(0.03)	(0.08)	(0.09)
Low income	-0.03	-0.23***	0.01	-0.02	-0.01	-0.06	-0.16**
	(0.02)	(0.08)	(0.02)	(0.08)	(0.02)	(0.07)	(0.08)
High income	-0.04	-0.39***	-0.01	0.09	0.14**	0.32**	0.01
	(0.03)	(0.13)	(0.03)	(0.13)	(0.06)	(0.15)	(0.13)
High wealth	-0.05***	-0.16*	0.00	0.17**	0.08**	0.31***	0.17**
	(0.02)	(0.08)	(0.02)	(0.08)	(0.03)	(0.08)	(0.08)
Low health	-0.07***	0.01	-0.03	-0.31***	-0.09***	-0.25**	-0.29***
	(0.02)	(0.11)	(0.02)	(0.10)	(0.03)	(0.11)	(0.09)
Correlations between the Domains:							
Corr. with Longevity		–		0.00		-0.05	
Corr. with Pension		0.00		–		0.29	
Corr. with Financial		-0.05		0.29		–	
Descriptive statistics:							
Mean dep. var.	0.07	0.00	0.06	-0.00	0.14	-0.00	-0.00
S.D. dep. var.	0.25	1.00	0.24	1.00	0.35	1.00	1.00
Observations	1000	1000	1000	1000	1000	1000	1000

Notes: The dependent variable in column (1) is 1 when the respondent's deviation in absolute terms from the actuarial population longevity is less than one year and 0 otherwise. The dependent variables in columns (3) and (5) are 1 when all answers within the corresponding domain (e.g., financial literacy) are correct and 0 otherwise. The dependent variables in columns (2), (4), and (6) are indexes tracking the knowledge of the single domains. The dependent variable in column (7) is an index measuring overall knowledge of factors influencing life-cycle behavior, computed as the equally weighted average of the three domain-specific knowledge indexes. Other controls include indicators for being married, childless, and self-employed, affiliated with language minorities, for the county of residence, for high health status, and for living in a rural area. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Landerretche and Martínez, 2013). Pension literacy shows no significant association with education, age, or income, and low levels of understanding are widespread throughout the sample. Interestingly, pension knowledge is positively associated with net (non-pension) wealth when using the standardized index as a measure (column (4)), suggesting that those who will be more reliant on pensions tend to be less informed.

Only 14% of respondents correctly answered all questions related to interest compounding, inflation, and risk diversification (column (5)), indicating low levels of financial literacy. Notably, we find no evidence of a gender gap in financial knowledge in our sample (columns (5)–(6)), in contrast to previous findings (Klapper and Lusardi, 2019). However, consistent with existing literature, financial literacy is positively associated with higher education, income and net wealth (Behrman et al., 2012), and follows a hump-shaped pattern with age (Lusardi and Mitchell, 2023). In this regard, our results align closely with the life-cycle model developed by Lusardi, Michaud and Mitchell (2017), which treats financial literacy as an endogenous choice made by individuals weighing its costs and benefits. According to this framework, financial literacy is initially low among young individuals, increases with age as they invest in acquiring it, and then gradually declines as it becomes optimal to let that knowledge depreciate.

Overall, Table 3 indicates that knowledge is highly fragmented across the three domains, with each dimension associated with distinct individual characteristics. While the correlation between pension-specific knowledge and financial literacy is low but positive (0.29), longevity literacy is virtually uncorrelated with either pension literacy (0.00) or financial literacy (-0.05). When examining the composite index that integrates all three domains (column (7)), women and individuals with lower incomes exhibit lower levels of general knowledge, largely due to their underestimation of peers' life expectancy.

V. Own Longevity Beliefs, Retirement and Satisfaction

This section examines the effect of providing respondents with information about longevity – specific to their age, gender, and county of residence – on their own longevity beliefs and pension-related outcomes (see Section II.B for the conceptual framework on belief updating). Table 4 reports respondents' beliefs about their life expectancy, their retirement age, and their satisfaction with retirement planning over the life cycle. Panel A presents coefficients for key covariates; panel B displays the role of prior beliefs about others' longevity; panel C reports the estimated effects of the information treatment; descriptive statistics are reported at the bottom of the Table.

To further analyze respondents' reasoning by bias type, Table 5 presents results separately for individuals with a negative bias, no significant bias, and a positive bias in their population longevity beliefs. This classification – similar to approaches used in studies of biased perceptions of income distributions (e.g., Cruces, Perez-Truglia and Tetaz, 2013) – enables the analysis of heterogeneous effects of the information treatment across bias types. Respondents are classified as unbiased if their beliefs about the life expectancy of similar individuals fall within 3 years of the actuarial estimate. Those who underestimate (overestimate) by more than three years are categorized as having a negative (positive) bias.[20] On average, individuals without significant bias display a small negative error of approximately 6 months.[21] Those with a negative bias underestimate the longevity of their peers by about 8 years, while positively biased individuals overestimate it by roughly 6 years.

V.A. Own longevity beliefs

Column (1) of Table 4 shows that respondents tend to have optimistic beliefs about their own longevity: on average, the control group reports a own life-expectancy of 85 years and 4 months – approximately 3 years more than what they predict for their peers. This pattern is consistent with the well-documented personal optimism bias, whereby individuals perceive their chances of experiencing positive outcomes as above average, and negative outcomes as below average (Weinstein, 1980). Own longevity beliefs appear quite unrelated to observable individual characteristics. Females do not expect any difference in their longevity relative to males, suggesting limited awareness of gender differences in life expectancy, as also reflected in population longevity estimates. Income appears to be negatively correlated with individuals' lifespan expectations, while respondents with high self-reported health report only a slightly higher expected longevity.

Notably, receiving information about the actuarial life expectancy of their reference group does not influence respondents' estimates of their own life expectancy. This null effect is striking, given that the information treatment could plausibly induce an update equivalent to the average underestimation of peers' longevity, which amounts to 2 years and 5 months. A first clue to understanding this puzzle emerges from examining the relationship between beliefs about others' longevity and one's own. Regression results indicate that the coefficient linking the two is statistically significant but relatively small (coefficient = 0.13). Specifically, a 10-year increase in perceived life expectancy for peers would be associated with an increase of only 1 year and 4 months in beliefs about one's own life expectancy. Given that the information treatment should increase peer-related estimates by 2 years and 5 months on average, a proportional spillover onto own longevity beliefs would imply an increase of around 4 months only, that is a coefficient of 0.3 years – very similar to the estimated (albeit statistically insignificant) information treatment effect. This would suggest that while the information is likely to shift peer-related beliefs, its influence on self-beliefs remains very limited.[22]

[20]Previously we defined as "precise estimate" those within one year of the actuarial estimate. Here, we use a three years threshold to more clearly distinguish biased beliefs, which may exhibit stronger updating, while ensuring a sufficient number of observations in the unbiased group.

[21]This is the only category in which both negative and positive biases coexist. In absolute terms, the average bias is 1.8 years.

[22]Because we deliberately do not re-elicit beliefs about population longevity to avoid anchoring and consistency pressures, we do not directly observe respondents' intermediate updating of beliefs about others' longevity. However, the baseline cross-sectional relationship between own and others' longevity beliefs (0.13), together with the average information update in population longevity beliefs (2.4 years) and the null treatment effect on own longevity beliefs

TABLE 4

BELIEFS ABOUT OWN LONGEVITY AND RETIREMENT PLANNING

	Own Longevity Beliefs	Retirement Age Beliefs	Retirement Planning Satisfaction
	(1)	(2)	(3)
Panel A: Personal characteristics			
Female	0.15	-2.07***	-0.03
	(0.29)	(0.28)	(0.02)
25–39 years old	-0.20	0.28	-0.04
	(0.38)	(0.40)	(0.03)
50–60 years old	-0.31	-0.25	0.06**
	(0.37)	(0.36)	(0.03)
College degree	0.44	0.84***	-0.01
	(0.33)	(0.31)	(0.03)
Employee	0.08	0.62	0.08**
	(0.41)	(0.45)	(0.04)
Low income	0.75**	0.68*	-0.15***
	(0.36)	(0.38)	(0.03)
High income	-1.19*	1.21**	-0.01
	(0.61)	(0.59)	(0.04)
High wealth	0.36	-0.59*	0.03
	(0.41)	(0.33)	(0.03)
Low health	0.15	-0.33	-0.10**
	(0.50)	(0.46)	(0.05)
High health	0.70*	-1.00***	-0.04
	(0.37)	(0.34)	(0.03)
Panel B: Prior beliefs			
Population longevity beliefs	0.13***	0.14***	-0.00
	(0.03)	(0.03)	(0.00)
Panel C: Information treatment effects			
Actuarial LE	0.31	0.19	0.04*
	(0.28)	(0.29)	(0.02)
Descriptive statistics:			
Avg. pop. long. bias	-2.41	-2.41	-2.41
Control dep. var. mean	85.34	66.28	0.82
Adjusted R-squared	0.04	0.11	0.09
Observations	1000	956	940

Notes: The dependent variable in column (1) represents the respondent's own longevity beliefs. The dependent variable in column (2) represents the respondent's expected age at retirement. The dependent variable in column (3) equals 1 when respondents report a value of 6 or higher (out of 10) when asked about their satisfaction with their retirement planning, and 0 otherwise. Columns (2) and (3) contain missing observations for respondents who reported that they do not expect to retire or selected the "I haven't planned anything" response. Other controls include indicators for being married, childless, self-employed, affiliated with language minorities, for the county of residence, and for living in a rural area. Table A.3 in the Appendix shows regression coefficients for the full set of covariates. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The fact that individuals do not revise their own mortality expectations in response to population mortality information has also been documented by Ciancio et al. (2024) in a recent study on reducing risky sexual behavior in Malawi, where HIV prevalence is high. Interestingly, while in their study the information intervention about mortality risk corrected population beliefs and altered sexual behavior, individuals' own mortality expectations remained unchanged.

A similar inelasticity in changing self-beliefs in response to population-level information has also been documented in the United States in the context of earnings expectations. Wiswall and Zafar (2015*a*) report that a 1% increase in beliefs about average population earnings is associated with a 0.31% increase in beliefs about own earnings. Moreover, a 1% update in the population earnings is associated with a 0.079% revision in self-earnings once individuals are informed about the true average population earnings. Using a different empirical approach, Wiswall and Zafar (2015*b*) find that a $1,000 error in perceived population earnings leads to an average revision of only $184 in individuals' beliefs about their own earnings after they are informed of the true population value. Taken together, this evidence suggests that individuals adjust beliefs about themselves only modestly in response to public population information.

NOVELTY AND RELEVANCE OF THE INFORMATION. The simple model presented in Section II.B shows why it is key that respondents consider the information about population longevity both *new* and *relevant* in order to revise their own longevity beliefs.

Given that respondents' average expectations about population longevity are relatively accurate – 2 years and 5 months lower than the actuarial estimate – we further analyze respondents' beliefs by bias type, as reported in columns (1)–(3) of Table 5. This allows us to assess whether the null average treatment effect is driven by the information not being sufficiently *new*, and whether receiving actuarial life expectancy information affects individuals with stronger biases.

On average, individuals who underestimate others' life expectancy by approximately 8 years expect to live to 84 years and 11 months (column (1)); those with no significant bias expect to live to 85 years and 5 months (column (2)); and those who overestimate others' longevity by nearly 6 years expect to live to 86 years and 3 months (column (3)). Although beliefs about personal longevity tend to increase with the perceived life expectancy of one's peer group, the average values remain relatively close across the three bias categories. Remarkably, even those with the most pessimistic views about others' longevity still expect to (slightly) outlive the sample's average actuarial life expectancy of 84 years and 9 months.

As we can see from Panel C, the information treatment has no significant effect even for individuals with strong biases, both those who underestimate their peers' longevity by 8 years on average and those who overestimate it by roughly 6 years on average. The relationship, presented in Panel B, between beliefs about others' longevity and beliefs about one's own longevity differs not only in magnitude but also in sign across bias groups. Individuals whose prior beliefs are

(0.31 years), is consistent with individuals updating their beliefs about population longevity.

TABLE 5

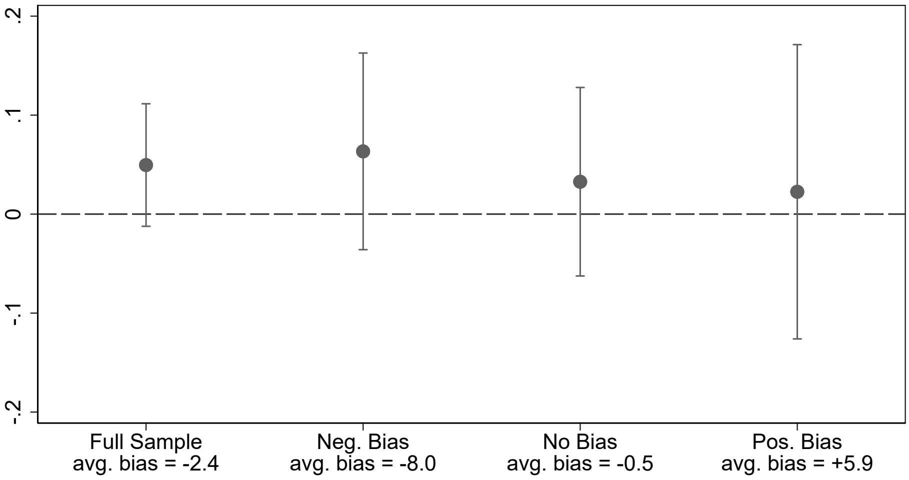
BELIEFS BY BIAS TYPE

	Own Longevity Beliefs			Retirement Age Beliefs			Retirement Planning Satisfaction		
	Neg Bias (1)	No Bias (2)	Pos Bias (3)	Neg Bias (4)	No Bias (5)	Pos Bias (6)	Neg Bias (7)	No Bias (8)	Pos Bias (9)
Panel A: Personal characteristics									
Female	0.54	0.29	0.22	-1.43***	-2.49***	-3.71***	-0.09**	-0.05	-0.07
	(0.61)	(0.46)	(0.97)	(0.47)	(0.58)	(0.70)	(0.04)	(0.04)	(0.06)
25–39 years old	-0.39	-0.69	1.15	0.56	0.41	-2.52***	-0.03	-0.04	-0.10
	(0.66)	(0.51)	(1.14)	(0.61)	(0.65)	(0.93)	(0.05)	(0.05)	(0.08)
50–60 years old	-0.27	-0.89**	1.11	0.13	-0.68	-0.33	0.04	0.10**	-0.06
	(0.71)	(0.43)	(1.10)	(0.53)	(0.59)	(1.23)	(0.04)	(0.04)	(0.06)
College degree	1.44**	-0.30	-0.18	1.47***	0.41	1.08	0.01	-0.01	-0.01
	(0.60)	(0.43)	(0.82)	(0.51)	(0.46)	(0.75)	(0.04)	(0.04)	(0.06)
Employee	-0.04	0.37	-0.29	0.67	0.40	1.86	0.08	0.04	0.21*
	(0.71)	(0.54)	(1.29)	(0.57)	(0.77)	(1.14)	(0.05)	(0.06)	(0.11)
Low income	0.77	0.86*	0.06	0.64	0.13	1.73*	-0.09**	-0.15***	-0.36***
	(0.60)	(0.47)	(1.18)	(0.49)	(0.66)	(0.88)	(0.04)	(0.05)	(0.10)
High income	-2.06*	-0.28	-1.26	0.14	1.91*	1.05	-0.07	0.05	0.01
	(1.05)	(1.01)	(1.33)	(0.88)	(1.14)	(1.11)	(0.07)	(0.05)	(0.06)
High wealth	0.41	0.65	-0.74	-0.86*	-0.75	0.61	0.05	0.01	0.11*
	(0.65)	(0.63)	(0.93)	(0.50)	(0.56)	(0.89)	(0.04)	(0.05)	(0.06)
Low health	-0.40	0.38	0.98	-0.40	0.15	-1.43	0.06	-0.16**	-0.14
	(0.86)	(0.64)	(1.13)	(0.84)	(0.58)	(1.44)	(0.06)	(0.07)	(0.09)
High health	0.95	0.76	1.11	-0.14	-1.41**	-2.68***	-0.04	-0.08	0.10
	(0.60)	(0.50)	(0.98)	(0.52)	(0.56)	(0.86)	(0.04)	(0.05)	(0.06)
Panel B: Prior beliefs									
Population longevity beliefs	-0.21***	0.32***	0.41**	0.07	0.27**	0.14	0.01*	-0.00	-0.01
	(0.07)	(0.11)	(0.16)	(0.06)	(0.11)	(0.12)	(0.01)	(0.01)	(0.01)
Panel C: Information treatment effects									
Actuarial LE	-0.29	0.61	0.81	-0.22	0.65	-0.27	0.03	0.07*	0.01
	(0.50)	(0.37)	(0.70)	(0.42)	(0.48)	(0.77)	(0.04)	(0.04)	(0.06)
Descriptive statistics:									
Avg. pop. long. bias	-8.00	-0.50	5.93	-8.00	-0.50	5.93	-8.00	-0.50	5.93
Control dep. var. mean	84.93	85.40	86.26	65.57	66.21	68.44	0.85	0.80	0.81
Age mean	44.23	44.39	41.17	44.23	44.39	41.17	44.23	44.39	41.17
Adjusted R-squared	0.05	0.07	0.08	0.08	0.07	0.20	0.05	0.06	0.34
Observations	392	448	160	373	435	148	371	416	153

Notes: The dependent variable in columns (1)-(3) represents the respondent's own longevity beliefs. The dependent variable in columns (4)-(6) represents the respondent's expected age at retirement. The dependent variable in columns (7)-(9) equals 1 when respondents report a value of 6 or higher (out of 10) when asked about their satisfaction with their retirement planning, and 0 otherwise. For each dependent variable, we estimate separate regressions on three samples: columns (1), (4), and (7) include individuals with a negative population longevity bias larger than 3 years; columns (2), (5), and (8) include individuals with almost no population longevity bias (within 3 years of the official figures); and columns (3), (6), and (9) include individuals with positive population longevity biases larger than 3 years. Columns (4)-(9) contain missing observations for respondents who reported that they do not expect to retire or selected the "I haven't planned anything" response. Other controls include indicators for being married, childless, and self-employed, affiliated with language minorities, for the county of residence, and for living in a rural area. Descriptive statistics for the groups' average age and population longevity bias are based on all respondents in each group, including those with missing outcome values. Table A.4 in the Appendix shows regression coefficients for the full set of covariates. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

FIGURE 2

THE RELEVANCE OF THE INFORMATION ON POPULATION LONGEVITY



Notes: The information experiment provided the treated group with the life expectancy estimates of the National Statistical Office specific to the respondent's age, gender, and county of residence, while the control group was only informed that the same office annually computes those estimates, but without being provided with any numerical figure. Immediately afterward, both treated and control groups were asked: "Do you think this information is relevant to you?". The dependent variable is equal to 1 when the respondent answered that they believe the information provided is relevant, and 0 otherwise. The figure illustrates the regression coefficient of the indicator for the treated group on this dependent variable, along with the 95% confidence intervals computed using robust standard errors. The regression controls for respondent gender, age group, county of residence, education, marital status, income group, wealth group, health status, being childless, being employed or self-employed, being part of a linguistic minority, and living in a rural or urban area. The markers represent regressions estimated on four different samples: the first (on the left) includes the full sample; the second includes individuals underestimating population longevity by more than 3 years (with an average bias of –8 years); the third includes individuals estimating population longevity within ±3 years of the actual value (with an average bias of –0.5 years); and the fourth includes individuals overestimating population longevity by more than 3 years (with an average bias of +6 years).

relatively accurate or who overestimate others' life expectancy display a positive correlation between their beliefs about others' and their own longevity, with coefficients ranging from 0.32 to 0.41. In contrast, those who underestimate others' life expectancy exhibit a negative correlation: lower beliefs about peer longevity are associated with a slightly higher own expected lifespan.

Therefore, providing information about the life expectancy of the individual's reference group does not affect one's own longevity beliefs even when the information is *new*, that is, when respondents hold strong (positive or negative) biases about population longevity (columns (1) and (3)). According to the updating model presented in Section II.B, this evidence suggests that the absence of any information treatment effect is due to respondents considering population longevity largely irrelevant for the formation of their own longevity beliefs, thereby not satisfying condition 2 of the model.

To further explore this possibility, we make use of the specific question asked at the end of the information treatment regarding the relevance of the information itself. The treated group received the life expectancy estimates of the National Statistical Office specific to the respondent's age, gender, and county of residence. The control group was only informed that the same office computes those estimates by age, gender, and county of residence, but without being provided with any numerical figures. Immediately afterward, both treated and control groups were asked: "Do you think this information is relevant to you?". Since the two groups differ only in the information provided (i.e., actuarial life expectancy), the difference in their answers regarding the relevance of the information should provide a good estimate of how relevant respondents perceive the information about population longevity to be.

Figure 2 shows the estimated effect of the information treatment on the perceived relevance of the provided information itself. The marker on the left reports the regression coefficient capturing the difference in the probability that treated versus control respondents state that they consider the information relevant in the full sample. The control group reports a 0.45 probability of perceiving the information as useful, while treated respondents exhibit a slightly higher perceived relevance, although the effect is not statistically significant. When we further analyze the effect by bias type, we again find no evidence that information provision alters respondents' assessment of its relevance, even when the information was *new* to them. Overall, this figure supports the conjecture that respondents consider population longevity largely irrelevant for forming beliefs about their own longevity, implying that condition 2 of the updating model does not hold.[23]

To explore potential explanations for the absence of updating we have documented, in Section VII we examine in depth the relationship between individuals' beliefs about their own longevity and those of others, presenting supporting evidence that individuals perceive these as two distinct and largely unrelated concepts.

V.B. Retirement age and satisfaction

Informing individuals who under- or overestimate average life expectancy could (in theory) prompt them to change their retirement age and pre-retirement savings, or lead them to reassess the adequacy of their retirement planning. However, we observe that providing information about the actuarial life expectancy of similar individuals does not significantly alter respondents' beliefs about their own longevity. The absence of any information-treatment effect in this first stage suggests that individuals are unlikely to incorporate such information into their personal expectations and, therefore, that the treatment is unlikely to affect downstream outcomes. Nevertheless, it is also possible that individuals deny explicit updating in own mortality beliefs but still take actions accordingly (e.g., Ciancio et al., 2024).

In particular, retirement age can be strategically chosen to optimize consumption by balancing the desire for leisure with the need to maintain financial stability over the entire life span. For this reason, we ask respondents the age at which they expect to retire. Column (2) of Table

[23] We also examine whether the absence of a treatment effect on individuals' own longevity beliefs is explained by a lack of general trust in the national government and, consequently, by individuals' perception that the provided longevity estimates are not *credible*. Table A.5 in the Appendix shows no statistically significant effect of the interaction term *Treat* × *Trust in Government*, indicating that, despite relatively wide confidence intervals, low institutional trust is unlikely to be the primary driver of the failure to update.

4 shows that, on average, respondents expect to retire at age 66. Women expect to retire (about two years) earlier, as do individuals in good health and those with higher wealth. By contrast, individuals with higher income and education expect to retire later, which may reflect greater job satisfaction or a stronger attachment to the labor market. We also observe, in Panel B, that longer perceived population longevity is associated with a later expected retirement age, although the estimated coefficient is relatively small (0.14). As predicted, providing respondents with information about the life expectancy of similar individuals with the same age, gender, and county of residence does not alter their beliefs about their expected retirement age (see Panel C). We confirm this finding when examining subsamples by bias type, as reported in columns (4)–(6) of Table 5. Notice that the positive correlation between population longevity beliefs and expected retirement age holds only for individuals with no bias in their beliefs about population longevity, while there is no significant correlation for those individuals who could, in principle, update their beliefs, i.e., those with substantial negative or positive biases regarding others' life expectancy.

Finally, we ask respondents about their satisfaction with financial planning for retirement. Among those who have undertaken such planning, respondents were asked to rate their satisfaction on a scale from 1 (lowest) to 10 (highest).[24] We consider individuals to be satisfied if they report a score of 6 or higher. Column (3) of Table 4 shows that employees and older individuals are generally more satisfied, whereas respondents with low income or poor health status are less likely to be satisfied with their retirement planning. Notably, we observe a small but positive effect of the information treatment on satisfaction.

However, the results by bias type, reported in columns (7)–(9) of Table 5, provide suggestive evidence consistent with this pattern. Individuals with strong biases do not exhibit any change in satisfaction after receiving official mortality figures. By contrast, those who were relatively accurate in estimating their peers' life expectancy report slightly higher levels of satisfaction. While these respondents' beliefs were already aligned with the actuarial data, they appear to derive reassurance from having their expectations validated. This confirmation effect may contribute to their increased satisfaction with retirement planning, as it reinforces their sense of preparedness.

Table A.6 in the Appendix shows that the information treatment has also no effect on other retirement-related outcomes, such as the willingness to participate in a complementary pension scheme or to annuitize the complementary pension fund after retirement.

V.C. Robustness checks

To further verify the robustness of our findings, we implement an alternative empirical strategy to examine the impact of the information treatment. In fact, the methodology used to estimate the effect of the information treatment requires the researcher to define thresholds for negative, zero, and positive biases, which may influence the resulting estimates.

Rather than testing multiple thresholds to classify individuals into bias groups, we leverage

[24]Sixty out of 1,000 individuals report having undertaken no retirement planning.

the recent methodology developed by Cattaneo et al. (2024, 2025) to estimate least-squares linear binscatter regressions. This approach provides a flexible way to describe the relationship between two variables – after adjusting for other covariates – by partitioning the independent variable of interest. In particular, the reported regression implements data-driven procedures to select the number of bins by minimizing the integrated mean squared error (IMSE), uses a 0-degree polynomial for point estimation and confidence intervals within each bin, employs a cubic B-spline approximation for confidence bands, and controls for the full set of covariates.

Figure A.2 in the Appendix illustrates the binned scatter plots and shows the relationship between errors in population longevity beliefs and own longevity beliefs for both the treated and control groups. The two groups display very similar relationships across the entire range of population longevity bias, further confirming the absence of heterogeneous effects of actuarial life expectancy information on individuals' own longevity expectations. Own longevity expectations (for both treated and control groups) remain nearly flat at around 85 years among individuals with negative population longevity bias, and show only a modest positive relationship among those with non-negative biases.

V.D. On the "flatness bias"

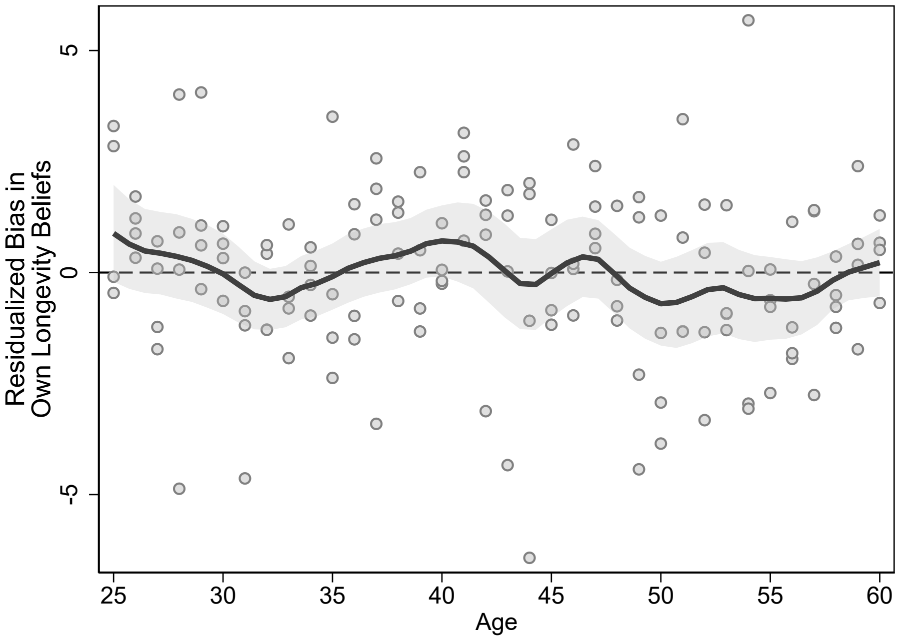
Our data can also help shed light on the so-called "flatness bias", which is frequently observed in studies comparing subjective and objective survival expectations (see Hudomiet, Hurd and Rohwedder, 2023, for a discussion). Several of these studies have noted that while the subjective probability of living to at least age 60 tends to be slightly pessimistic compared to objective values, the probability of living to at least age 80 is often moderately optimistic. This pattern implies a flatter subjective survival distribution than the actuarial one.

Many recent papers have attributed this flatness bias in survival probabilities to age-specific distortions in individuals' subjective life expectancies (Ludwig and Zimper, 2013; Nicholls and Zimper, 2015; Heimer, Myrseth and Schoenle, 2019; O'Dea and Sturrock, 2023). In particular, they suggest that younger individuals tend to be overly pessimistic about their survival prospects, whereas older individuals tend to be overly optimistic. However, Hudomiet, Hurd and Rohwedder (2023) provide evidence that this interpretation is likely incorrect. Instead, they argue that the flatness bias arises from the high uncertainty individuals face and the way such surveys typically elicit survival expectations. Indeed, surveys frequently elicit survival probabilities by asking respondents about their perceived chances of living to a particular target age that depends on their current age (e.g., in the Health and Retirement Study, HRS). [25] Because younger respondents are asked about lower target ages than older ones and many individuals tend to anchor their answers around 50%, given the inherent uncertainty surrounding such probabilistic judgments, the observed flatness bias is mechanically generated by the design of the belief elicitation method.

[25]The exact question in the HRS is: "What is the percent chance that you will live to be X?", where X is 75 if the respondent is under 65, 80 if aged 65–69, 85 if aged 70–74, 90 if aged 75–79, 95 if aged 80–84, and 100 if aged 85–89.

FIGURE 3

AGE DISTORTIONS IN OWN LONGEVITY BELIEF BIASES



Notes: The figure presents scatter plots of group-level residualized biases in own longevity beliefs against age. We first compute the difference between individuals' own longevity beliefs and the actuarial life expectancy of their reference group (defined by age, gender, and county of residence). This difference is then residualized with respect to the full set of covariates used in the main analysis (respondent gender, county of residence, education, marital status, income group, wealth group, health status, being childless, being employed or self-employed, being part of a linguistic minority, and living in a rural or urban area), as well as the treatment indicator, to account for the potential effect of providing actuarial life expectancy information on own longevity beliefs. To abstract from individual private information, we define group-level residualized biases in own longevity beliefs as the average residuals within groups of individuals sharing the same age, gender, and county of residence. The black line represents a kernel-weighted local polynomial fit of the group-level residualized biases in own longevity beliefs, and the grey shaded area indicates the 95% confidence interval.

Our results align with the interpretation of Hudomiet, Hurd and Rohwedder (2023). First, also in our setting – where we elicit point estimates of longevity (rather than survival probabilities) and beliefs about the longevity of others (in addition to own longevity) – individuals' expectations reveal substantial dispersion. Beliefs about population life expectancy exhibit a wide range (Figure 1), spanning from 65 to 100 years, highlighting the limited and imprecise nature of individuals' objective knowledge. Second, our age-invariant elicitation of longevity beliefs reveals no age-specific association in either longevity literacy (Table 2, column (1); Table 3, columns (1)–(2)) or own longevity expectations (Table 4, column (1)). Finally, to assess more precisely whether age-specific biases arise in the formation of own longevity beliefs, we construct group-level residualized biases and examine how these vary across age (Figure 3); again, we find no age-specific relationship.

Specifically, we first compute the difference between individuals' own longevity beliefs and the actuarial life expectancy of their reference group (defined by age, gender, and county of residence). This difference is then residualized with respect to the full set of covariates, including the self-assessed health status. To further abstract from individual private information, we define group-level residualized biases as the average residuals within groups of individuals sharing the same age, gender, and county of residence. Figure 3 shows that group-level residualized biases in own longevity expectations are unrelated to age in our sample. The local polynomial fit (black line) fluctuates around zero, and the confidence interval consistently includes zero across all ages. Thus, our results are in line with the interpretation of Hudomiet, Hurd and Rohwedder (2023) and cast doubts on the existence of the so-called "flatness bias" in survival expectations.

VI. What the experts know

The results presented so far show that not only do individuals possess very little and fragmented knowledge required to make sound financial decisions over the life cycle, but they also perceive their own longevity as largely disconnected from the life expectancy of similar individuals, leading them not to update their own lifespan expectations when provided with population longevity information.

To assess whether these findings are predictable and consistent with existing academic beliefs, we collected forecasts from academic experts before the results were known. This approach not only reveals what experts expected based on their field of knowledge and expertise, but also makes their prior beliefs explicit, thereby clarifying whether the obtained results constitute a departure from existing academic knowledge (see DellaVigna, Pope and Vivalt, 2019; DellaVigna and Vivalt, 2025, for a discussion).

VI.A. Expert survey

1. Survey. The survey of experts, registered as AEARCTR-0017251, is implemented in Qualtrics and consists of four pages. The first page collects experts' background information, and the remaining three pages contain three blocks of questions. The first two blocks elicit experts' predictions about individuals' knowledge in each domain – longevity, pension, and financial – as well as individuals' beliefs about their own longevity. The third block elicits experts' predictions about the effect of the information treatment, i.e., the effect of updating population longevity beliefs on individuals' own longevity. Each expert formulates forecasts for profile cases – constructed using real observations from the individual survey – by entering numerical predictions. We use text-based inputs rather than sliders to avoid anchoring at the midpoint.[26] The Qualtrics screens for all three blocks are reproduced in Appendix E.

[26]To ensure data quality, non-numeric entries are flagged as errors and must be corrected before proceeding. Upper and lower bounds are imposed to reduce typographical mistakes. The specific limits are not disclosed unless a forecast falls outside the permitted range. The lower bound equals the profile's reported age, since longevity cannot be below the current age. The upper bound is set to 120 years, which is 20 years above the highest population-longevity belief observed in the individuals' survey. This upper bound is sufficiently high not to constrain expert predictions for our sample – whose respondents are at most 60 years old – while still helping to prevent typing errors.

TABLE 6
DESCRIPTIVE STATISTISTICS OF EXPERTS

	All experts initiated survey	Experts completed survey	Final sample of experts
	(1)	(2)	(3)
Assistant Professor	0.16	0.18	0.18
Associate Professor	0.21	0.21	0.22
Professor	0.41	0.43	0.45
Other	0.17	0.18	0.15
Behavioral Economics	0.24	0.25	0.23
Standard Economics	0.38	0.42	0.43
Demography	0.12	0.12	0.13
Finance	0.13	0.14	0.14
Other	0.13	0.07	0.07
Newsletter	0.40	0.37	0.35
Email	0.60	0.63	0.65
Female	0.30	0.31	0.31
Age	49.6	49.4	50.1
Observations	319	272	262

Notes: This table displays the characteristics of all experts initiating the survey in column (1), the experts that completed the survey in column (2) and the final sample of experts (excluding phd students) used in the analysis in column (3).

2. EXPERTS. To recruit experts, we use two channels: academic newsletters and direct email. First, we distribute the survey through four newsletters of academic associations whose members work primarily in behavioral economics and finance.[27] From November 24 to December 3, 2025, the invitation to participate (a sample is reported in Appendix E) was distributed through the selected newsletters.

Second, we contact additional experts directly by email. To select experts, we rank scholars publishing in the fields of retirement, aging, and longevity by the number of citations accumulated over the past fifteen years. We contact the most cited authors first and stop once we obtain more than 200 completed surveys in total.[28] From December 16, 2025 to January 15, 2026, all emails (a sample is reported in Appendix E) were sent using the Qualtrics survey distribution function.

Out of 319 experts who initiated the survey, 272 completed it. The main sample consists of

[27] The academic associations contacted through their newsletters are: Behavioral Experimental Economic Network (BEEN), Society for the Advancement of Behavioral Economics (SABE), Economic Science Association (ESA), and the Association of Italian Professors of Finance (ADEIMF, Associazione dei Docenti di Economia degli Intermediari e dei Mercati Finanziari e Finanza d'Impresa).

[28] To construct the email list, we compile an initial corpus of more than 30,000 publications in economics and demography from the past 15 years indexed in Web of Science that contain at least one of the following keywords: "pension", "pensions", "retirement", "life-cycle", "aging", "ageing", "mortality", "longevity", or "life expectancy." We assign each publication a score equal to its Web of Science citation count if it is published within the past five years, and half that score if it is published before 2020. For each author, we compute a cumulative score by summing scores across publications in the period and rank authors accordingly. We divide the ranked list into batches, send invitations sequentially (starting from the highest-ranked batch), and stop once we obtain more than 200 completed surveys in total.

262 experts and excludes responses with missing forecasts as well as respondents who have not yet received their PhD.[29] Table 6 reports summary statistics on selection into survey completion and inclusion in the final sample. All survey links are anonymous, so background information is provided directly by participating experts.

3. SURVEY PROFILES AND EXPERT PREDICTIONS. To ensure comparability between our sample and expert predictions, we construct profiles based on data from respondents in the initial survey and present them to the experts. Each expert evaluates two profiles: Case A (used for predictions on individual literacy) and Case B (used for predictions on the effects of the information treatment). In the Appendix, Table A.7 and Table A.8 report all Case A and Case B profiles, respectively, together with their corresponding weights in the baseline survey data. Figure 4 summarizes the survey flow, after the page collecting experts' background information.

In the first two blocks, each expert is randomly assigned to one of the Case A profiles (e.g., a 49-year-old man). Each profile reports a specific age and gender, together with the corresponding actuarial life expectancy.[30] To construct the 30 Case A profiles, we use baseline survey data to define 15 age cells per gender, corresponding to equally sized age groups. The profile's age and actuarial life expectancy are set to the cell mean.

In the first block, experts are asked to predict the profile's beliefs about her own longevity and population longevity. Providing the profile's actuarial life expectancy ensures that all experts share a common informational baseline and can focus exclusively on how individuals form beliefs about population longevity and their own longevity.[31]

In the second block, experts are asked to predict the number of correct answers the profile gives on the pension literacy (two questions) and financial literacy (three questions) modules. The full wording and answer options presented to the respondents are accessible via a "more info" button.

Given that, in the first two blocks, each expert is presented with only one Case A profile, we are able to compute the correlation among forecasts of individuals' knowledge in the longevity, pension, and financial domains. This approach allows us to infer the correlations that academic experts –as a group– implicitly assume across the different knowledge components, without directly asking them to predict the average correlations among these domains.

[29]Excluding PhD students slightly increases the average age of the sample, decreases the share of individuals contacted through newsletters, and – given that most of these newsletters were related to behavioral economics – reduces the share of behavioral scholars.

[30]To help experts better contextualize the specific profile, we also inform them that the individuals are located in Northern Italy.

[31]Absent this information, expert forecasts would conflate two distinct components of knowledge: (i) experts' beliefs about the distribution of actuarial life expectancy in our (geographically concentrated) sample, and (ii) experts' beliefs about how individuals perceive their own and population longevity. By directly providing the actuarial benchmark, we isolate experts' knowledge about individuals' beliefs.

In the third block, each expert is randomly assigned to one of the Case B profiles. Each profile reports a specific belief about population longevity (e.g., "a participant who estimated the average longevity of people of their same age, gender, and county of residence to be 75 years"). We construct 24 Case B profiles to capture the population longevity beliefs in the individual survey data, disaggregated by gender and county of residence. Specifically, we first exclude the extreme population longevity beliefs (below 67.5 and above 97.5 years), which account for less than 1 percent of the sample. We then partition the distribution of population longevity beliefs into 5-year intervals and compute the average actuarial life expectancy revealed to treated individuals within each interval-by-gender-by-county cell.[32]

In the third block, experts are first asked to predict the profile's own longevity beliefs when the individual is not provided with actuarial life expectancy information. We then provide the actuarial life expectancy – corresponding to the cell mean of the presented profile – and ask experts to predict the profile's own longevity beliefs when the individual is provided with this information. This design allows us to measure, conditional on a given population-longevity belief, the predicted information-treatment effect as the difference in predicted own longevity beliefs with and without the actuarial life expectancy information.[33]

VI.B. Expert forecasts

1. Knowledge. We start the analysis with experts' forecasts of individuals' population longevity, pension, and financial literacy, collected in blocks 1 and 2 of the expert survey. First, we estimate the predicted population-longevity bias by subtracting the actuarial life expectancy of the profile from the predicted population longevity belief. Second, we compute predicted average literacy in the pension and financial domains by dividing the predicted number of correct answers by the number of questions in each module (i.e., the average score). We then construct standardized indices for the predicted values within each domain using the same procedure as in the baseline analysis (see Section IV) and compute the correlations among them.

By pooling forecasts across the randomized profiles, we can characterize the implied knowledge of the academic experts as a whole. Figure 5 indicates the mean forecasts across the 262 experts for average knowledge in the three domains and the implied correlations among their levels of literacy. On average, forecasts are fairly accurate.

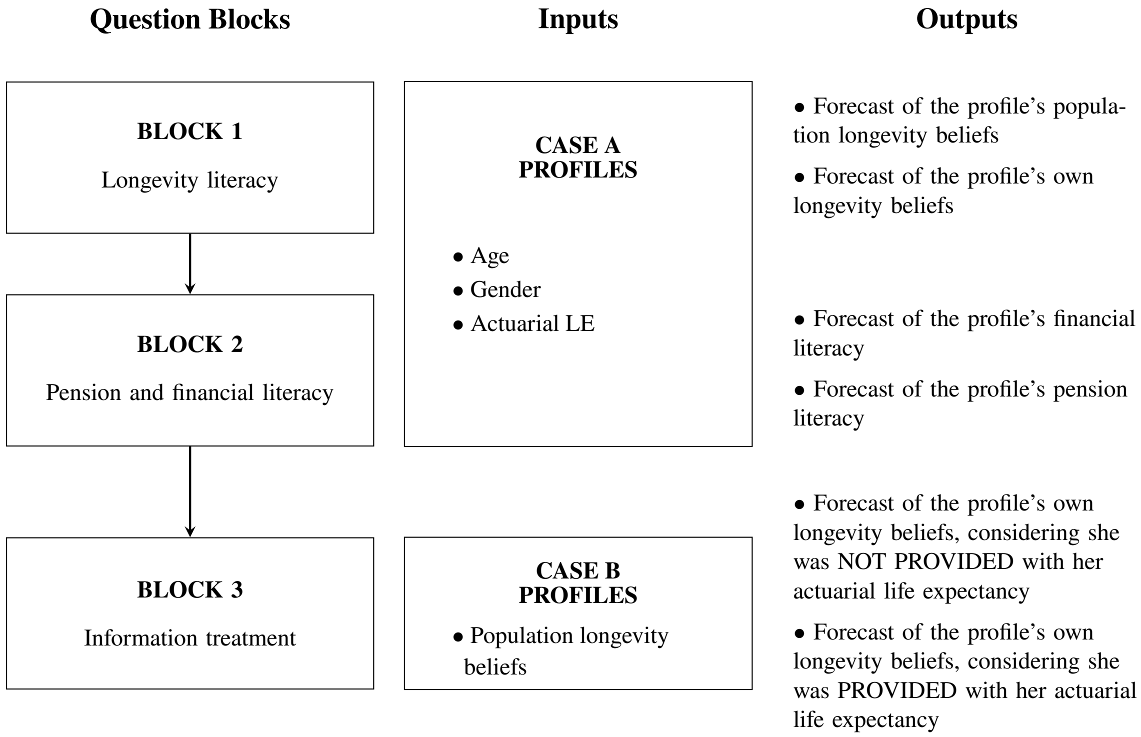
Experts correctly predict a negative bias in population longevity expectations of approximately two years, a pension literacy score of 0.39 (above the actual value but below predicted

[32]Excluding these outliers preserves statistical power by avoiding very rare cases for which treated or control observations are missing. For consistency, we exclude the same individuals from the baseline survey data when comparing expert forecasts to realized outcomes.

[33]While the household RCT employs a between-subject design to prevent priming and consistency pressures among respondents, the expert survey intentionally uses a paired, within-subject design, following the approach of DellaVigna and Pope (2018), who ask experts to predict the effects of all treatment conditions. Eliciting forecasts under both conditions is intended to encourage experts to think explicitly about the treatment effect and draw on their knowledge of the literature when making their predictions.

FIGURE 4

EXPERT FORECAST INFORMATION FLOW



financial literacy), and an average financial literacy score of 0.45.[34] At this aggregate level, their collective predictions correctly mirror the fragmented nature of literacy in the actual data.[35] Experts implicitly predict a correlation of -0.05 between the longevity and financial domains (vs. -0.05 in the data), 0.06 between longevity and pension domains (vs. 0.00), and 0.20 between pension and financial domains (vs. 0.29) .

Notably, experts also predicted average own longevity beliefs with remarkable accuracy, forecasting 85.3 years for untreated individuals, exactly matching the value observed in the data. This forecast correctly captures individuals' optimism bias, namely their tendency to expect longer lives than both similar others and actuarial benchmarks.

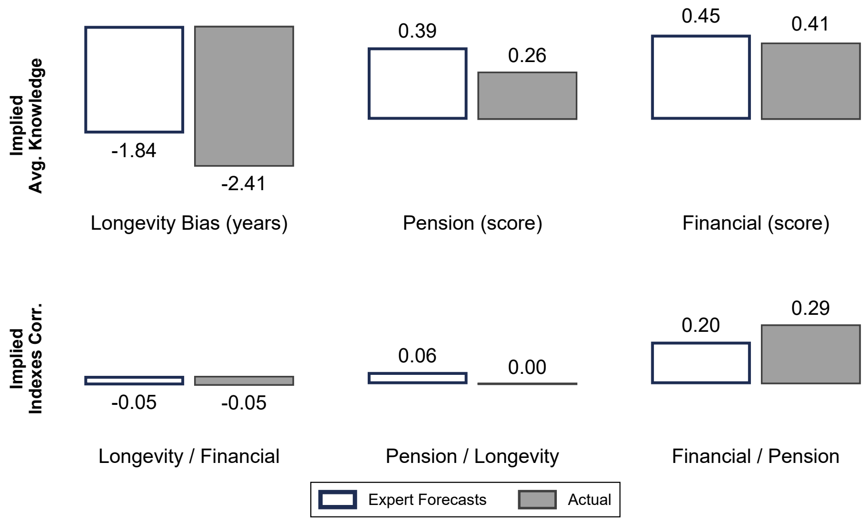
To summarize, the expert group demonstrates a strong understanding of individuals' average knowledge in each domain and the relationships among them, suggesting that our sample indeed consists of experts in the field.

2. INFORMATION TREATMENT. Figure 6 illustrates experts' accuracy in predicting the information-treatment effect. Specifically, it shows their perceptions of how providing individuals with their actuarial life expectancy affects the formation of their expectations about their own longevity.

[34]The less accurate predictions about individuals' pension knowledge may reflect the country-specific nature of the questions on the pension system.

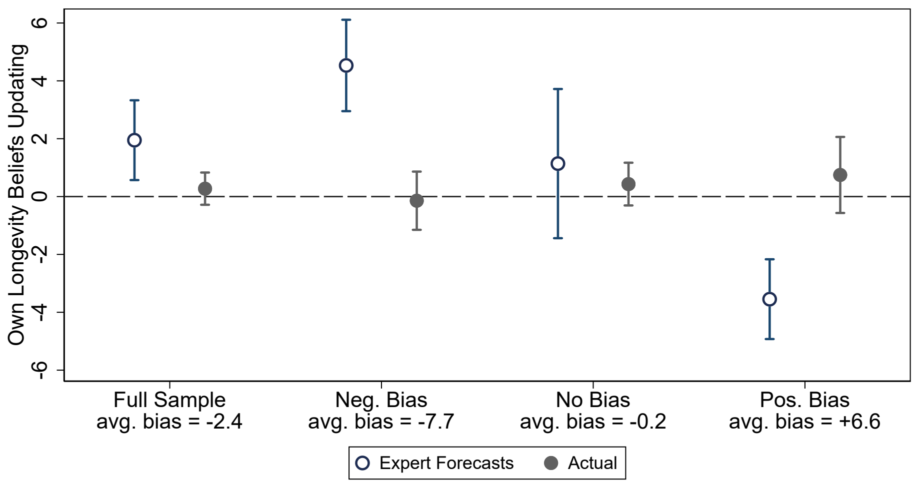
[35]While experts were not asked to predict individual-level correlations, correlating their point forecasts across the representative profiles reveals the macro-level expectations of the expert group.

FIGURE 5



Notes: This figure illustrates experts' forecasts (white) and actual values (grey) of the implied average knowledge levels and their correlations across the three domains: population longevity beliefs, pension knowledge, and financial literacy. The top panel reports the average bias in population longevity beliefs, as well as the average probability that individuals answer questions correctly in the pension-specific and financial literacy modules. The bottom panel reports the implied correlations between each pair of standardized indices. The standardized indices are constructed as described in Section IV.

FIGURE 6



Notes: This figure plots the treatment-indicator coefficient and 95% confidence intervals from regressions of an indicator for being informed about actuarial life expectancy on subjective longevity beliefs, using the expert-survey forecasts (white) and the actual data (grey). Regressions using the actual data exclude respondents with population longevity beliefs below 67.5 years or above 97.5 years, since these extreme cases (less than 1% of the sample) are not presented to experts. The regressions using the expert survey weight observations by the representativeness of each profile in the actual data. The left panel reports the treatment effect in the full sample, which has an average negative population-longevity bias of 2.4 years (in the expert-survey profiles). The middle-left panel reports the effect for individuals with a negative bias (-7.7 years), the middle-right panel for individuals with little or no bias (-0.2 years), and the right panel for individuals with a positive bias (+6.6 years).

To measure this, we use the forecasts collected in block 3 of the survey.[36]

In particular, Figure 6 shows the regression coefficient of the treatment indicator on own longevity beliefs, controlling for the population-longevity bias of the profile across the full sample and within specific bias groups. Overall, experts predict that individuals adjust their expectations about their longevity when provided with the information. Across the full sample, which has an average negative bias of 2.4 years, experts anticipate an average update of approximately 2 years. Looking within bias groups, the updating pattern implies an elasticity of approximately 0.6 for individuals with a bias greater than 3 years, whether positive or negative, and much more variable responses when individuals hold little or no bias about population longevity. Thus, the forecasts completely fail to predict the absence of updating observed in the individual data.

We next examine whether discrepancies between forecasts of the information-treatment effect and the realized outcomes can be attributed to the experts' fields, seniority, or recruitment channels. Figure 7 reports the average forecasted treatment effect for subsamples defined by primary field of research, academic rank, and recruitment channel.[37] Perhaps surprisingly, differences across groups are almost negligible. Behavioral economists display updating beliefs similar to those of other economists and scholars in other fields. Academic seniority also does not appear to matter for forecast accuracy.[38] Estimates are also very similar across the two recruitment channels. Some heterogeneity emerges only when experts are asked to predict the subjective longevity of individuals with a positive population-longevity bias. In this subgroup, finance experts and experts early in their academic careers or outside academia (classified as "other" rank) predict a higher elasticity of revision in own longevity beliefs.[39]

These results suggest that inaccurate expert updating beliefs are not confined to a specific field or to less experienced respondents, but instead reflect a broadly held view that individuals update their subjective longevity when confronted with population information. Having established that our finding about the absence of updating is unexpected by experts, in the next section we explore the reasons for it in more detail.

[36]Because each expert, after being assigned a profile with a specific population-longevity bias, makes predictions both when the profile does not know its actuarial life expectancy and when it does, the estimation sample contains twice as many observations as the number of experts. The treatment indicator is set to one for predictions under the condition that the profile knows its actuarial life expectancy, and zero otherwise.

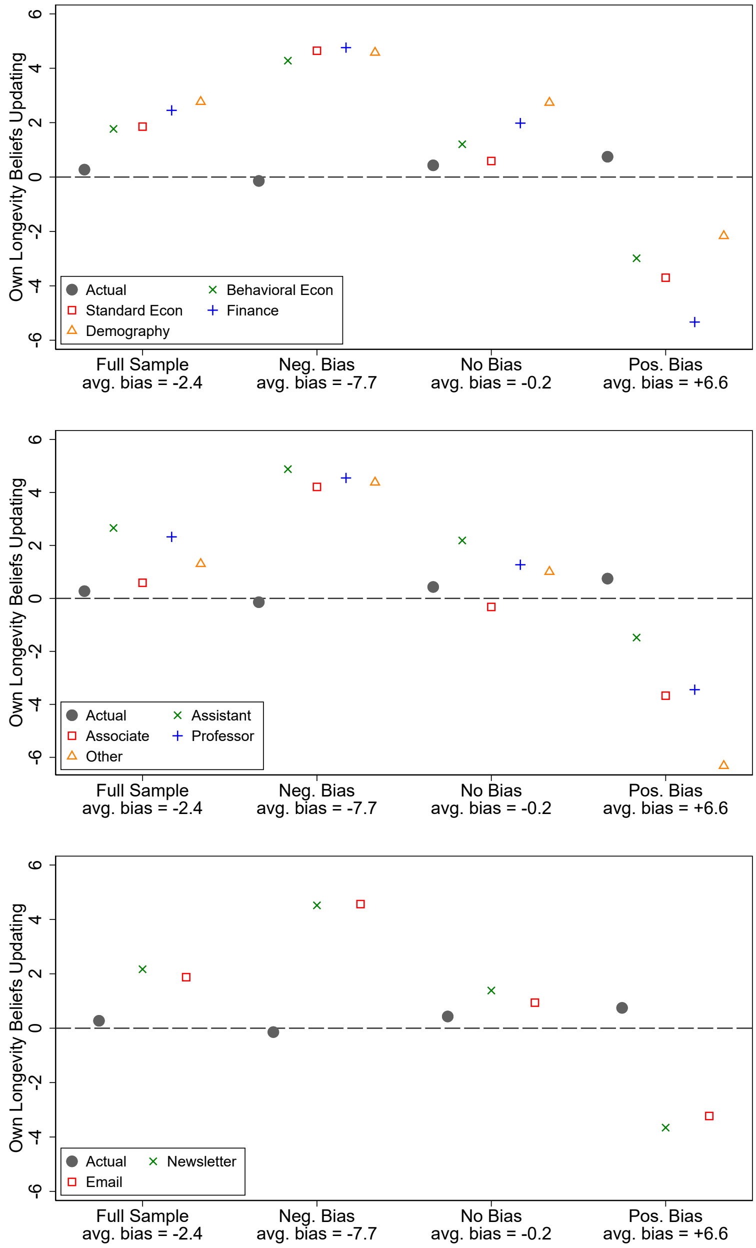
[37]Because the composition of expert characteristics differs across subsamples, each regression controls for expert gender and age, and includes fixed effects for academic rank, primary field of research, and recruitment channel.

[38]Associate Professors exhibit more inelastic updating only for compositional reasons: they are more likely to be assigned profiles with no significant bias.

[39]Part of the observed differences in the predicted updating of beliefs among individuals with positive population longevity bias may reflect variation in exposure to different strands of the literature. Academics in economics may anticipate slightly weaker updating of own longevity beliefs in response to positive biases than to negative biases, consistent with the documented asymmetry in reactions to "good news" and "bad news" (Eil and Rao, 2011; Möbius et al., 2022). By contrast, experts in finance may be less inclined to differentiate updating patterns by the type of informational shock, viewing longevity beliefs primarily as inputs into financial decision-making rather than qualities that people care about (Barron, 2021).

FIGURE 7

HETEROGENEITY IN THE PREDICTED TREATMENT EFFECTS



Notes: This figure plots the treatment-indicator coefficients from regressions of an indicator for being informed about actuarial life expectancy on subjective longevity beliefs, using the actual data (grey) and the expert-survey forecasts (colored). Regressions using the actual data exclude respondents with population longevity beliefs below 67.5 years or above 97.5 years, since these extreme cases (less than 1% of the sample) are not presented to experts. Regressions using the expert survey weight observations by the representativeness of each profile in the realized data and control for experts' age, gender, primary field of research, academic rank, and recruitment channel. Each panel reports the treatment effect in the full sample, among individuals with a negative bias (-7.7 years), among individuals with little or no bias (-0.2 years), and among individuals with a positive bias (+6.6 years). The top row reports separate regressions by primary field of research, the middle row by academic rank, and the bottom row by recruitment channel.

VII. BELIEFS ABOUT OWN AND OTHERS' LONGEVITY

This section explores respondents' reasoning by examining the relationship between their own and others' longevity beliefs. We have observed that individuals seem to perceive their own longevity as almost completely disconnected from the longevity of similar others, making the provision of population longevity information ineffective for helping them form beliefs about their own longevity.

To further investigate this pattern, we first analyze the distribution of (untreated) respondents' beliefs regarding their own longevity and the longevity of others. The comparison reveals a clear optimism gap. The left panel of Figure 8a depicts the probability density functions (PDFs) of the two belief distributions. While some respondents estimate that similar others may live only up to 65 years, the lowest self-reported estimate for personal longevity is 78 years. Furthermore, the shapes of the two distributions differ markedly: beliefs about others' longevity resemble a symmetric distribution, while beliefs about one's own longevity show a truncated left side distribution, reflecting systematically less pessimistic expectations and a mean roughly 3 years higher. The right panel of Figure 8a illustrates the corresponding cumulative distribution functions (CDFs). The distribution of one's own longevity beliefs stochastically dominates the distribution of beliefs about others' mortality. For example, while 21% of respondents believe that similar others will die on average before the age of 80, only 1% expect to die themselves before reaching that age. This discrepancy highlights the asymmetry in how individuals internalize mortality risks for themselves compared to others, reinforcing the concept of personal optimism bias in longevity expectations.

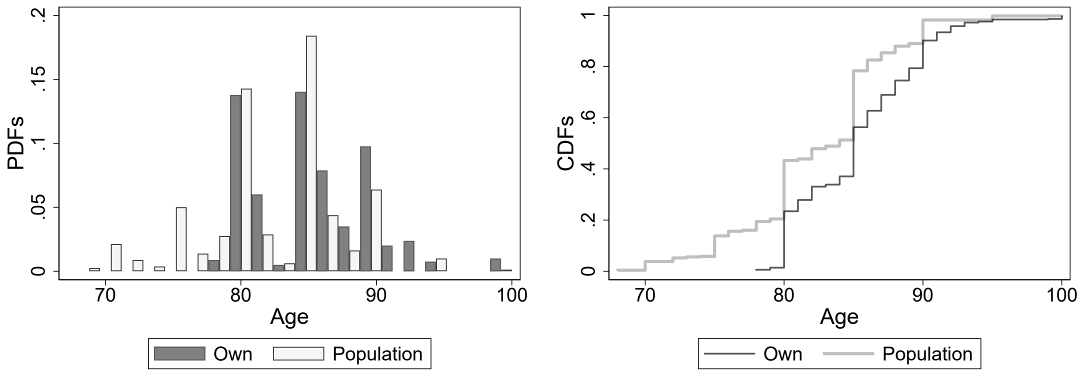
We then examine how individuals' own longevity beliefs correlate with their population longevity beliefs. The left panel of Figure 8b presents the scatter plots between (untreated) respondents' beliefs about their own longevity and the longevity of similar others. Since Figure 8a revealed a natural threshold at 80 years – below which virtually no respondent expects to die – correlations are reported for the full sample, as well as separately for individuals with population longevity beliefs below 80 years and those with beliefs above 80 years. The right panel of Figure 8b reports the same plots using predicted beliefs from the expert survey (collected in block 1).

Two main findings emerge. First, the actual correlation between own and population longevity beliefs is close to zero ($\rho = 0.09$), whereas experts predict a strong positive correlation ($\rho = 0.6$), similar to the predicted elasticity of updating in the information treatment (collected in block 3 of the expert survey). Second, while experts anticipate a homogeneous correlation between own and population longevity beliefs among respondents with different population longevity beliefs ($\rho_{<80} = 0.57$ and $\rho_{>80} = 0.55$); individuals who believe that similar others die before age 80 exhibit a null – if not slightly negative – correlation with their own expected age at death ($\rho_{<80} = -0.03$), but those who believe that population longevity exceeds 80 years show a positive – albeit low – correlation ($\rho_{>80} = 0.22$).

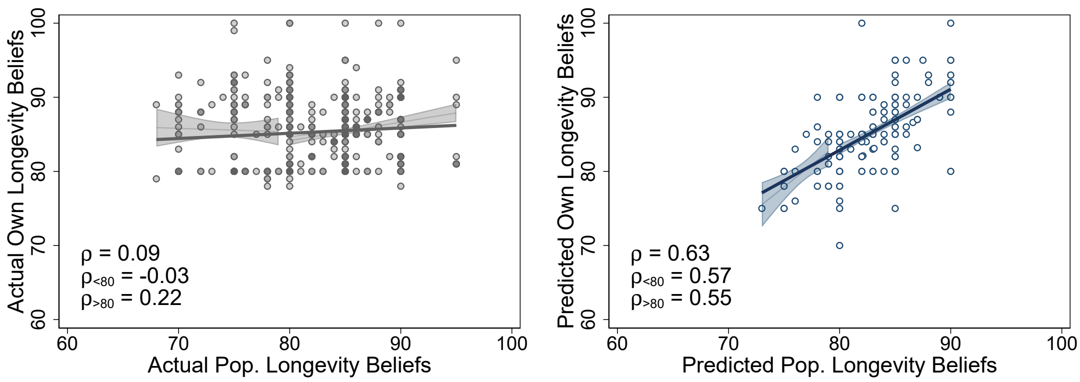
The fact that untreated individuals' beliefs about their own longevity and that of others are essentially uncorrelated – contrary to academic experts' expectations – is consistent with the view that the absence of updating is driven by the fact that individuals do not take population longevity into account when forming beliefs about their own longevity. This finding supports the conjecture that population longevity beliefs play little role in the formation of personal longevity

FIGURE 8

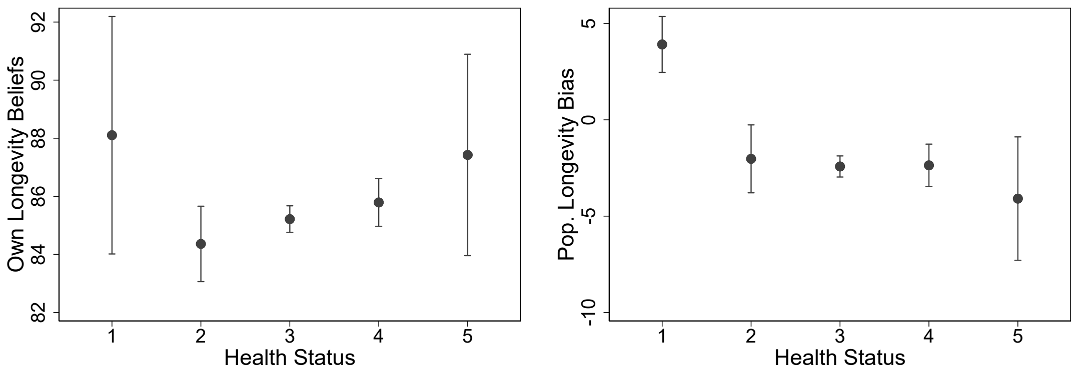
(A) DISTRIBUTIONS OF OWN AND POPULATION LONGEVITY BELIEFS



(B) CORRELATION BETWEEN OWN AND POPULATION LONGEVITY BELIEFS



(C) SELF-REPORTED HEALTH STATUS AND LONGEVITY BELIEFS



Notes: Panel A shows the distributions of own longevity beliefs and population longevity beliefs. The left panel displays the probability density functions (PDFs) of own longevity beliefs and population longevity beliefs, the right panel displays the corresponding cumulative distribution functions (CDFs). Panel B illustrates the scatter plots and the correlations between the own longevity beliefs and the population longevity beliefs. The left panel displays the actual survey data on individuals, and the right panel displays the experts' predicted values. Panel C presents binscatter plots of the health status against the own longevity beliefs and the population longevity beliefs. The regressions are estimated using the methodology developed by Cattaneo et al. (2024, 2025). The regressions employ a 0-degree polynomial for point estimation and for constructing confidence intervals within each bin. They control for respondent gender, age group, county of residence, education, marital status, income group, wealth group, being childless, being employed or self-employed, being part of a linguistic minority, and living in a rural or urban area.

expectations, as documented empirically in Section V and contrary to what assumed in the conceptual updating framework presented in Section II.

Finally, we exploit individuals' reported health status to better understand how it relates to the particular self-others longevity pattern that emerges in the data. Figure 8c shows the relationship between self-assessed health status – ranging from 1 (lowest) to 5 (highest) – and individuals' beliefs about others' longevity as well as their own longevity. The plots are estimated using the covariate-adjusted binned regression methods developed by Cattaneo et al. (2024, 2025) and described in Section V.

On the left panel, the relationship between self-assessed health status and beliefs about self-longevity is not clear and follows a mild U-shaped pattern. The few individuals at the extremes of the health distribution (levels 1 and 5) report beliefs about their own longevity centered around a relatively high average of 88 years and with very large but similar confidence intervals.[40] On the right panel, however, we observe a cleaner and negative relationship between self-assessed health status and biases in *population* longevity beliefs. In particular, individuals reporting the lowest health status expect others to outlive the actuarial life expectancy by about 4 years, and these estimates are accompanied by substantially narrower confidence intervals. All other individuals exhibit pessimistic beliefs about population longevity, expecting others to die about 2-4 years earlier than the actuarial life expectancy.

Taken together, these figures illustrate a distinctive interplay between beliefs about one's own longevity and the longevity of similar others. Individuals expect to live longer than their peers, consistent with the standard optimism bias; particularly, because they perceive themselves as less likely to experience negative events (Weinstein, 1980), such as premature death. At the same time, beliefs about one's own lifespan appear largely unrelated to beliefs about the lifespan of similar others. One possible interpretation is that personal longevity beliefs are formed primarily through "introspection" – that is, by looking inward to one's own feelings and personal thoughts – whereas beliefs about others' longevity are formed through "extrospection," by looking outward to observable characteristics and behaviors, following the distinction proposed by Pronin (2008). Notably, individuals who perceive themselves as particularly unhealthy tend to hold higher beliefs about others' longevity rather than lower beliefs about their own longevity. As a result, relative longevity beliefs remain consistent with perceived health status without requiring a downward revision of expected personal lifespan. This pattern suggests that individuals may engage in a form of willful ignorance to protect their self-image (Grossman and van der Weele, 2017). More generally, revising personal beliefs may be particularly costly (Golman, Hagmann and Loewenstein, 2017), even when doing so could potentially improve decision-making.

The disconnect between beliefs about one's own longevity and the longevity of similar others helps explain why providing tailored actuarial life expectancy information is ineffective in

[40] Only 11 individuals report the lowest level of self-assessed health, and 22 report the highest. Among untreated individuals, the corresponding numbers are 4 and 14, respectively.

reshaping beliefs about one's own lifespan. Interestingly, both the weak relationship between own and others' longevity beliefs and the resulting absence of updating following information provision are largely unanticipated by academic experts. Even experts in behavioral economics expect individuals to strongly link beliefs about their own longevity to those of similar others and, consequently, to revise those beliefs when presented with relevant information.

VIII. Conclusion

According to theory, people's longevity expectations should influence many economic and social behaviors. This article explores how individuals think about longevity. Using a socio-economic survey combined with an information experiment, we identify gaps in longevity, pension, and financial literacy, and disentangle subjective beliefs about one's own longevity from beliefs about the longevity of similar others.

Population longevity beliefs, while only modestly pessimistic on average, display substantial dispersion, with 40% of respondents' estimates deviating from actuarial estimates by more than five years. In particular, women expect to live approximately as long as their male peers, thereby underestimating their actuarial life expectancy by more than three years, potentially resulting in financial shortfalls. More generally, individuals exhibit low and fragmented literacy across all domains.

As global aging continues, understanding how to help individuals formulate more accurate longevity expectations becomes increasingly important. Using an information experiment, we test the effectiveness of providing actuarial life expectancy information in shaping beliefs about individuals' own longevity and retirement-related outcomes (e.g., expected retirement age). Subjective life expectancy among individuals receiving longevity information does not differ from that of the control group, suggesting that population longevity information is not incorporated when individuals form beliefs about their own mortality. Consequently, retirement-related decisions also remain unaffected. The near-zero correlation between beliefs about one's own longevity and that of peers is consistent with individuals placing little weight on population life expectancy when forming personal longevity expectations.

To further explore the mismatch between what is assumed to be useful in the formation of beliefs and what actually shapes them, we compare our results with forecasts provided by academic experts. On average, experts correctly anticipate several key features of the data, but a sizeable discrepancy emerges in their predictions of the information experiment's effectiveness. Experts forecast substantial updating of individuals' own longevity expectations in response to the actuarial information provision, whereas we observe no updating in the data.

Our findings call into question governments' efforts to improve decision-making by informing individuals about life expectancy. Public pension statements informing about population longevity – even when personalized on the basis of characteristics such as age and gender – as well as life expectancy calculators developed by social security administrations, may have little or no effect on individuals' retirement decisions.[41] Likewise, several programs – particularly in developing and emerging countries – designed to raise awareness of increasing life expectancy may exert only limited effects on individuals' subjective longevity expectations.[42]

The concept of one's own mortality appears to be so deeply rooted that simply providing actuarial information is insufficient. This underscores the need for future research to identify interventions that more effectively help individuals incorporate realistic longevity expectations into their decisions, particularly in retirement planning but also in other domains. The difficulty of doing so reflects a longstanding human tendency: contemplating one's own mortality does not come naturally. *Memento mori.*

[41] Several governments have introduced initiatives aimed at improving retirement planning by providing information about life expectancy. Historically, some public pension statements included information on increasing life expectancy (e.g., the "Orange Envelope" in Sweden; see Kritzer and Smith, 2016). More recently, social security administrations and national statistical offices in different countries have developed online life expectancy calculators to help individuals make more informed retirement-related decisions (e.g., the SSA Longevity Calculator and Longevity Visualizer in the United States, the ONS Life Expectancy Calculator and the Moneyhelper platform in the United Kingdom, the Sorted platform in New Zealand).

[42] These initiatives include programs whose primary objective is to communicate increases in life expectancy (e.g., PIDS InfoBits in the Philippines, `https://www.pids.gov.ph/details/resource/infographics-infobits/infobits-on-filipinos-life-expectancy`)

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APPENDIX (FOR ONLINE PUBLICATION ONLY)

APPENDIX A. FIGURES AND TABLES

FIGURE A.1

Knowledge Components Assessment

PART 1: LONGEVITY

1. **In your opinion, what is the average life expectancy (i.e., age at death) for a** [respondent's age] **years-old** [respondent's gender] **living in** [respondent's county]?

PART 2: PENSION

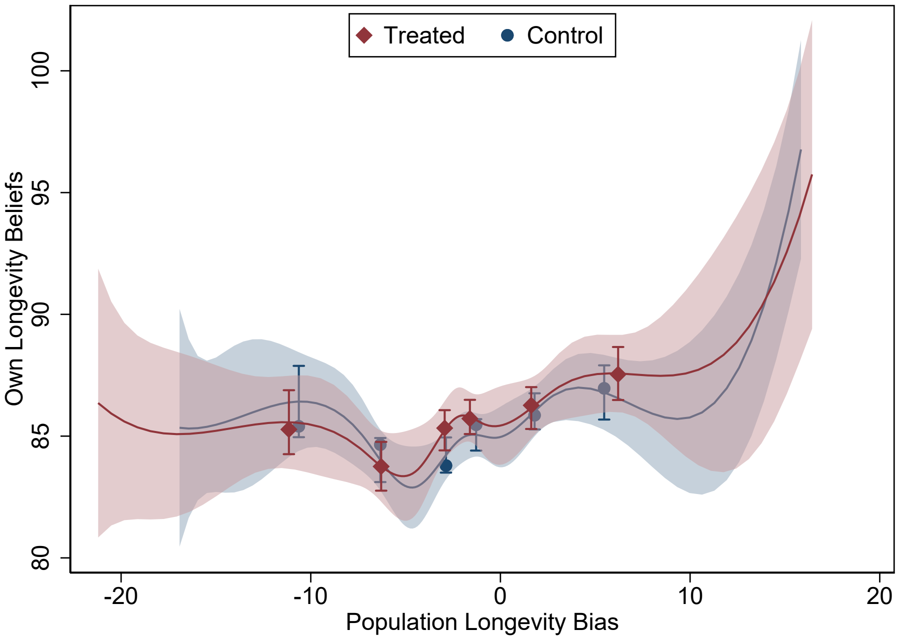
2. **Do you know how social security benefits are currently calculated for new employees?**
   a) Yes, with a contribution-based system, i.e., based on all contributions paid during the working period
   b) Yes, with a earnings-based system, i.e., based only on salaries and contributions from the final years of work
   c) Yes, with a mixed system, i.e., partly contribution-based and partly earnings-based
   d) Don't know
3. **In your opinion, the social security contributions currently paid by workers are:**
   a) Used to pay for current retirees
   b) Saved in individual accounts and invested in markets
   c) Partly for current retirees and partly saved for the worker
   d) Don't know

PART 3: FINANCIAL

4. **Suppose you had €100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?**
   a) More than €110
   b) Exactly €110
   c) Less than €110
   d) Don't know
5. **Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?**
   a) More than today
   b) The same
   c) Less than today
   d) Don't know
6. **Please tell me whether this statement is true or false. 'Buying a single company's stock usually provides a safer return than a stock mutual fund'.**
   a) True
   b) False
   c) Don't know

FIGURE A.2

BINSCATTER OF OWN LONGEVITY BELIEFS



Notes: The figure presents binscatter plots of population longevity biases against own longevity beliefs. The regression is estimated using the methodology developed by Cattaneo et al. (2024, 2025). It employs a 0-degree polynomial for point estimation and for constructing confidence intervals within each bin, and uses a cubic B-spline approximation to generate confidence bands. It controls for respondent gender, age group, county of residence, education, marital status, income group, wealth group, being childless, being employed or self-employed, being part of a linguistic minority, and living in a rural or urban area.

TABLE A.1

KNOWLEDGE OF THE INDIVIDUAL COMPONENTS

Domain:	Longevity	Pension		Financial		
	Beliefs Bias	Benefits Calculation	System Financing	Interest Rate	Inflation	Risk Divers.
	(1)	(2)	(3)	(4)	(5)	(6)
Female	-3.34***	-0.04	0.01	-0.04	-0.03	0.05
	(0.35)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age	-0.10	-0.00	0.01	0.01	0.03*	0.03*
	(0.17)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Age squared/100	0.09	0.00	-0.01	-0.02	-0.03*	-0.03*
	(0.19)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
College degree	0.78*	0.04	0.01	0.07*	0.09**	0.06*
	(0.40)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
Married	0.25	-0.01	-0.05*	0.03	-0.01	-0.11***
	(0.40)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
Childless	-0.22	-0.04	-0.04	0.04	0.00	0.04
	(0.49)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)
Employee	-0.21	0.09**	0.01	0.13***	-0.05	-0.10**
	(0.51)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)
Self-employed	-0.19	0.12**	-0.08*	0.09*	0.02	-0.07
	(0.62)	(0.05)	(0.04)	(0.05)	(0.05)	(0.06)
German group	-0.73	-0.01	0.02	0.01	-0.00	-0.03
	(0.45)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)
Low income	-0.76*	-0.02	0.01	-0.02	-0.02	-0.02
	(0.43)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
High income	-0.58	0.06	0.00	0.08	0.10	0.14**
	(0.83)	(0.07)	(0.05)	(0.07)	(0.07)	(0.07)
High wealth	-0.33	0.14***	-0.02	0.20***	0.09**	0.02
	(0.45)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)
Low health	0.92	-0.17***	-0.02	-0.08*	-0.07	-0.11*
	(0.60)	(0.04)	(0.04)	(0.05)	(0.05)	(0.06)
High health	-0.73*	0.02	0.05	0.01	0.04	0.06
	(0.44)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)
Province of Trento	-2.05***	-0.04	0.01	-0.03	0.01	0.01
	(0.38)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Rural area	-0.75*	-0.00	0.08***	0.04	0.06	0.04
	(0.39)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Constant	3.77	0.25	0.04	-0.00	-0.29	-0.11
	(3.66)	(0.29)	(0.28)	(0.31)	(0.31)	(0.32)
Descriptive statistics:						
Mean dep. var.	-2.41	0.32	0.20	0.34	0.36	0.53
S.D. dep. var.	5.73	0.47	0.40	0.47	0.48	0.50
Observations	1000	1000	1000	1000	1000	1000

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.2

INTEGRATED KNOWLEDGE OF THE COMPONENTS

Domain:	Longevity		Pension		Financial		Overall
	Precise Estimate	Index	All Correct	Index	All Correct	Index	Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female	0.01	-0.15**	-0.02	-0.05	0.00	-0.02	-0.12*
	(0.02)	(0.06)	(0.02)	(0.06)	(0.02)	(0.06)	(0.06)
Age	-0.01	-0.02	0.01	0.01	0.03***	0.07**	0.03
	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.03)
Age squared/100	0.01	0.03	-0.01	-0.02	-0.03***	-0.08**	-0.04
	(0.01)	(0.04)	(0.01)	(0.04)	(0.01)	(0.03)	(0.04)
College degree	0.02	0.07	0.03	0.08	0.08***	0.21***	0.19**
	(0.02)	(0.07)	(0.02)	(0.08)	(0.03)	(0.07)	(0.08)
Married	-0.01	0.10	-0.01	-0.11	-0.01	-0.08	-0.05
	(0.02)	(0.07)	(0.02)	(0.07)	(0.02)	(0.07)	(0.07)
Childless	-0.01	0.00	-0.00	-0.14	0.06*	0.08	-0.02
	(0.02)	(0.09)	(0.02)	(0.09)	(0.03)	(0.08)	(0.09)
Employee	-0.04	-0.01	-0.02	0.16*	0.00	-0.01	0.08
	(0.03)	(0.10)	(0.02)	(0.09)	(0.03)	(0.08)	(0.09)
Self-employed	-0.06*	-0.01	-0.05*	0.04	0.04	0.05	0.04
	(0.03)	(0.12)	(0.03)	(0.11)	(0.04)	(0.11)	(0.12)
German group	-0.00	0.01	0.05**	0.02	-0.02	-0.02	0.00
	(0.02)	(0.09)	(0.02)	(0.09)	(0.03)	(0.08)	(0.08)
Low income	-0.03	-0.23***	0.01	-0.02	-0.01	-0.06	-0.16**
	(0.02)	(0.08)	(0.02)	(0.08)	(0.02)	(0.07)	(0.08)
High income	-0.04	-0.39***	-0.01	0.09	0.14**	0.32**	0.01
	(0.03)	(0.13)	(0.03)	(0.13)	(0.06)	(0.15)	(0.13)
High wealth	-0.05***	-0.16*	0.00	0.17**	0.08**	0.31***	0.17**
	(0.02)	(0.08)	(0.02)	(0.08)	(0.03)	(0.08)	(0.08)
Low health	-0.07***	0.01	-0.03	-0.31***	-0.09***	-0.25**	-0.29***
	(0.02)	(0.11)	(0.02)	(0.10)	(0.03)	(0.11)	(0.09)
High health	-0.01	-0.06	0.02	0.12	-0.03	0.10	0.09
	(0.02)	(0.08)	(0.02)	(0.08)	(0.03)	(0.08)	(0.08)
Province of Trento	0.03**	-0.06	0.01	-0.04	-0.05**	-0.01	-0.06
	(0.02)	(0.07)	(0.02)	(0.07)	(0.02)	(0.07)	(0.07)
Rural area	-0.00	-0.08	0.03*	0.13*	0.02	0.13*	0.09
	(0.02)	(0.07)	(0.02)	(0.07)	(0.02)	(0.07)	(0.07)
Constant	0.19	0.60	-0.15	-0.37	-0.56***	-1.62***	-0.74
	(0.16)	(0.66)	(0.17)	(0.68)	(0.21)	(0.62)	(0.67)
Correlations between the Domains:							
Corr. with Longevity		-		0.00		-0.05	
Corr. with Pension		0.00		-		0.29	
Corr. with Financial		-0.05		0.29		-	
Descriptive statistics:							
Mean dep. var.	0.07	0.00	0.06	-0.00	0.14	-0.00	-0.00
S.D. dep. var.	0.25	1.00	0.24	1.00	0.35	1.00	1.00
Observations	1000	1000	1000	1000	1000	1000	1000

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.3
BELIEFS ABOUT OWN LONGEVITY AND RETIREMENT PLANNING

	Own Longevity Beliefs	Retirement Age Beliefs	Retirement Planning Satisfaction
	(1)	(2)	(3)
Panel A: Personal characteristics			
Female	0.15	-2.07***	-0.03
	(0.29)	(0.28)	(0.02)
25–39 years old	-0.20	0.28	-0.04
	(0.38)	(0.40)	(0.03)
50–60 years old	-0.31	-0.25	0.06**
	(0.37)	(0.36)	(0.03)
College degree	0.44	0.84***	-0.01
	(0.33)	(0.31)	(0.03)
Married	0.21	-0.14	0.05**
	(0.33)	(0.31)	(0.03)
Childless	-0.09	-0.07	0.02
	(0.39)	(0.40)	(0.03)
Employee	0.08	0.62	0.08**
	(0.41)	(0.45)	(0.04)
Self-employed	-0.72	1.09*	0.09**
	(0.51)	(0.58)	(0.04)
German group	0.57	-0.59*	0.03
	(0.38)	(0.35)	(0.03)
Low income	0.75**	0.68*	-0.15***
	(0.36)	(0.38)	(0.03)
High income	-1.19*	1.21**	-0.01
	(0.61)	(0.59)	(0.04)
High wealth	0.36	-0.59*	0.03
	(0.41)	(0.33)	(0.03)
Low health	0.15	-0.33	-0.10**
	(0.50)	(0.46)	(0.05)
High health	0.70*	-1.00***	-0.04
	(0.37)	(0.34)	(0.03)
Province of Trento	1.00***	-0.69**	0.05*
	(0.32)	(0.31)	(0.03)
Rural area	0.27	-0.84**	0.02
	(0.32)	(0.35)	(0.03)
Panel B: Prior beliefs			
Population longevity beliefs	0.13***	0.14***	-0.00
	(0.03)	(0.03)	(0.00)
Panel C: Information treatment effects			
Actuarial LE	0.31	0.19	0.04*
	(0.28)	(0.29)	(0.02)
Descriptive statistics:			
Avg. pop. long. bias	-2.41	-2.41	-2.41
Control dep. var. mean	85.34	66.28	0.82
Observations	1000	956	940

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4
Beliefs about Own Longevity and Retirement Planning by Bias Type

	Own Longevity Beliefs			Retirement Age Beliefs			Retirement Planning Satisfaction		
	Neg Bias (1)	No Bias (2)	Pos Bias (3)	Neg Bias (4)	No Bias (5)	Pos Bias (6)	Neg Bias (7)	No Bias (8)	Pos Bias (9)
Panel A: Personal characteristics									
Female	0.54	0.29	0.22	-1.43***	-2.49***	-3.71***	-0.09**	-0.05	-0.07
	(0.61)	(0.46)	(0.97)	(0.47)	(0.58)	(0.70)	(0.04)	(0.04)	(0.06)
25–39 years old	-0.39	-0.69	1.15	0.56	0.41	-2.52***	-0.03	-0.04	-0.10
	(0.66)	(0.51)	(1.14)	(0.61)	(0.65)	(0.93)	(0.05)	(0.05)	(0.08)
50–60 years old	-0.27	-0.89**	1.11	0.13	-0.68	-0.33	0.04	0.10**	-0.06
	(0.71)	(0.43)	(1.10)	(0.53)	(0.59)	(1.23)	(0.04)	(0.04)	(0.06)
College degree	1.44**	-0.30	-0.18	1.47***	0.41	1.08	0.01	-0.01	-0.01
	(0.60)	(0.43)	(0.82)	(0.51)	(0.46)	(0.75)	(0.04)	(0.04)	(0.06)
Married	0.23	0.13	0.47	-0.31	-0.59	1.43*	0.08**	0.03	0.01
	(0.59)	(0.44)	(0.96)	(0.49)	(0.49)	(0.75)	(0.04)	(0.04)	(0.06)
Childless	-0.04	-0.35	0.44	0.41	-0.77	1.87**	0.04	0.03	0.05
	(0.67)	(0.50)	(1.04)	(0.56)	(0.66)	(0.86)	(0.05)	(0.05)	(0.08)
Employee	-0.04	0.37	-0.29	0.67	0.40	1.86	0.08	0.04	0.21*
	(0.71)	(0.54)	(1.29)	(0.57)	(0.77)	(1.14)	(0.05)	(0.06)	(0.11)
Self-employed	-0.48	-1.11*	-1.29	0.37	1.68	1.82	0.05	0.08	0.31***
	(0.99)	(0.67)	(1.44)	(0.71)	(1.06)	(1.21)	(0.07)	(0.07)	(0.11)
German group	1.57**	-0.46	0.94	0.35	-1.06**	-1.17	0.01	0.04	0.07
	(0.68)	(0.47)	(0.99)	(0.61)	(0.45)	(0.79)	(0.05)	(0.05)	(0.07)
Low income	0.77	0.86*	0.06	0.64	0.13	1.73*	-0.09**	-0.15***	-0.36***
	(0.60)	(0.47)	(1.18)	(0.49)	(0.66)	(0.88)	(0.04)	(0.05)	(0.10)
High income	-2.06*	-0.28	-1.26	0.14	1.91*	1.05	-0.07	0.05	0.01
	(1.05)	(1.01)	(1.33)	(0.88)	(1.14)	(1.11)	(0.07)	(0.05)	(0.06)
High wealth	0.41	0.65	-0.74	-0.86*	-0.75	0.61	0.05	0.01	0.11*
	(0.65)	(0.63)	(0.93)	(0.50)	(0.56)	(0.89)	(0.04)	(0.05)	(0.06)
Low health	-0.40	0.38	0.98	-0.40	0.15	-1.43	0.06	-0.16**	-0.14
	(0.86)	(0.64)	(1.13)	(0.84)	(0.58)	(1.44)	(0.06)	(0.07)	(0.09)
High health	0.95	0.76	1.11	-0.14	-1.41**	-2.68***	-0.04	-0.08	0.10
	(0.60)	(0.50)	(0.98)	(0.52)	(0.56)	(0.86)	(0.04)	(0.05)	(0.06)
Province of Trento	1.37**	0.75*	1.59*	-1.25***	0.41	-0.42	0.00	0.08**	0.01
	(0.55)	(0.44)	(0.82)	(0.44)	(0.50)	(1.09)	(0.04)	(0.04)	(0.06)
Rural area	0.67	0.29	-0.06	-0.63	-0.57	-1.73*	0.03	0.03	-0.03
	(0.57)	(0.44)	(0.85)	(0.60)	(0.50)	(0.92)	(0.04)	(0.04)	(0.06)
Panel B: Prior beliefs									
Population longevity beliefs	-0.21***	0.32***	0.41**	0.07	0.27**	0.14	0.01*	-0.00	-0.01
	(0.07)	(0.11)	(0.16)	(0.06)	(0.11)	(0.12)	(0.01)	(0.01)	(0.01)
Panel C: Information treatment effects									
Actuarial LE	-0.29	0.61	0.81	-0.22	0.65	-0.27	0.03	0.07*	0.01
	(0.50)	(0.37)	(0.70)	(0.42)	(0.48)	(0.77)	(0.04)	(0.04)	(0.06)
Descriptive statistics:									
Avg. pop. long. bias	-8.00	-0.50	5.93	-8.00	-0.50	5.93	-8.00	-0.50	5.93
Dep. var. mean	84.93	85.40	86.26	65.57	66.21	68.44	0.85	0.80	0.81
Observations	392	448	160	373	435	148	371	416	153

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.5

Outcome:	Own Longevity Beliefs				Information Relevance			
	Full sample (1)	Neg. Bias (2)	No Bias (3)	Pos. Bias (4)	Full sample (5)	Neg. Bias (6)	No Bias (7)	Pos. Bias (8)
Treat x Trust in Goverment	-0.08	1.23	-0.29	-0.36	0.07	0.09	0.04	0.10
	(0.57)	(1.03)	(0.73)	(1.50)	(0.06)	(0.10)	(0.10)	(0.16)
Treat	0.35	-0.81	0.73	0.98	0.01	0.03	0.01	0.00
	(0.38)	(0.65)	(0.51)	(0.94)	(0.04)	(0.07)	(0.06)	(0.11)
Trust in Goverment	0.08	-1.24*	0.53	0.19	-0.11**	-0.12*	-0.08	-0.09
	(0.39)	(0.71)	(0.47)	(1.16)	(0.04)	(0.07)	(0.07)	(0.10)
Avg. pop. long. bias	-2.41	-8.00	-0.50	5.93	-2.41	-8.00	-0.50	5.93
Control dep. var. mean	85.34	84.93	85.40	86.26	0.45	0.38	0.54	0.37
Adjusted R-squared	0.04	0.05	0.07	0.06	0.02	0.03	-0.01	0.17
Observations	1000	392	448	160	1000	392	448	160

Notes: The dependent variable in columns (1)-(4) represents the respondent's own longevity beliefs. The dependent variable in columns (5)-(8) represents the respondent's perceived relevance of the information received about the popualtion longevity. The *trust in government* variable equals 1 when respondents report a value of 6 or higher (out of 10) when asked about their trust in the national government. For each dependent variable, we estimate separate regressions on four samples: the full sample; a subsample including individuals with a negative population longevity bias larger than 3 years; a subsample including individuals with almost no population longevity bias (within 3 years of the official figures); and a subsample including individuals with positive population longevity biases larger than 3 years. Controls include population longevity beliefs and indicators for being female, 25-39 years old, 50-60 years old, having a college degree, being married, childless, employed, self-employed, affiliated with language minorities, income group, for high wealth, health status, for the county of residence, for living in a rural area. Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.6
BELIEFS ABOUT OTHER OUTCOMES BY BIAS TYPE

	Receiving Info via Email			Complementary Pension Scheme			Annuitize Compl. Pension		
	Neg Bias (1)	No Bias (2)	Pos Bias (3)	Neg Bias (4)	No Bias (5)	Pos Bias (6)	Neg Bias (7)	No Bias (8)	Pos Bias (9)
Panel A: Personal characteristics									
Female	0.04	0.02	0.09**	-0.00	-0.13**	0.10	-0.12	-0.06	0.31
	(0.03)	(0.03)	(0.05)	(0.05)	(0.06)	(0.10)	(0.14)	(0.14)	(0.19)
25–39 years old	0.00	-0.01	-0.11**	0.12*	-0.02	0.12	-0.32**	-0.02	-0.82***
	(0.04)	(0.04)	(0.05)	(0.07)	(0.07)	(0.11)	(0.13)	(0.14)	(0.25)
50–60 years old	-0.06*	-0.09***	-0.11**	-0.09	-0.12*	0.05	-0.28*	0.18	-0.58**
	(0.03)	(0.03)	(0.05)	(0.06)	(0.06)	(0.14)	(0.14)	(0.12)	(0.22)
College degree	0.04	0.03	0.00	-0.01	0.09	0.09	-0.08	-0.04	0.21
	(0.04)	(0.03)	(0.05)	(0.06)	(0.06)	(0.10)	(0.12)	(0.12)	(0.20)
Married	0.01	0.01	0.01	-0.05	0.04	-0.05	0.22*	-0.08	0.25
	(0.03)	(0.03)	(0.04)	(0.05)	(0.05)	(0.10)	(0.11)	(0.12)	(0.21)
Childless	-0.02	0.04	0.05	-0.04	0.08	-0.06	-0.09	0.21	0.64**
	(0.04)	(0.04)	(0.04)	(0.06)	(0.07)	(0.12)	(0.13)	(0.14)	(0.30)
Employee	0.06	-0.03	-0.15*	0.11**	0.04	-0.12	0.27*	0.07	-0.62*
	(0.04)	(0.03)	(0.08)	(0.05)	(0.06)	(0.13)	(0.15)	(0.19)	(0.31)
Self-employed	0.01	-0.00	-0.19**	0.15**	0.06	-0.34**	0.51**	0.01	-0.43
	(0.04)	(0.04)	(0.08)	(0.07)	(0.08)	(0.14)	(0.19)	(0.21)	(0.37)
German group	-0.07**	-0.00	0.02	0.03	0.02	0.02	-0.06	-0.48***	0.08
	(0.03)	(0.04)	(0.04)	(0.06)	(0.07)	(0.09)	(0.12)	(0.12)	(0.29)
Low income	0.01	-0.01	-0.15***	0.03	0.00	-0.28***	-0.01	-0.05	-0.47
	(0.04)	(0.03)	(0.05)	(0.05)	(0.05)	(0.09)	(0.18)	(0.14)	(0.29)
High income	-0.04	-0.03	-0.01	0.00	0.08	0.19	-0.29	0.45*	-0.30
	(0.04)	(0.06)	(0.11)	(0.11)	(0.13)	(0.26)	(0.19)	(0.26)	(0.25)
High wealth	-0.02	0.05	0.09	0.04	-0.04	-0.05	0.24*	0.11	-0.01
	(0.03)	(0.04)	(0.06)	(0.06)	(0.06)	(0.11)	(0.13)	(0.11)	(0.22)
Low health	0.06	0.01	-0.02	0.07	0.04	0.10	0.19	-0.67***	0.20
	(0.05)	(0.03)	(0.03)	(0.08)	(0.08)	(0.14)	(0.17)	(0.22)	(0.43)
High health	0.07**	0.04	0.09	0.08	-0.03	0.18	-0.14	0.18	0.06
	(0.03)	(0.04)	(0.06)	(0.06)	(0.07)	(0.11)	(0.11)	(0.12)	(0.21)
Province of Trento	-0.06*	-0.03	0.00	-0.04	0.01	0.13	0.06	-0.17	-0.18
	(0.03)	(0.03)	(0.04)	(0.05)	(0.05)	(0.09)	(0.10)	(0.13)	(0.25)
Rural area	-0.00	0.02	0.02	0.02	0.00	0.02	0.14	0.22**	-0.24
	(0.03)	(0.02)	(0.03)	(0.05)	(0.05)	(0.08)	(0.11)	(0.10)	(0.23)
Panel B: Prior beliefs									
Population longevity beliefs	-0.00	-0.00	0.00	0.00	0.02	-0.03**	-0.00	-0.03	0.00
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)
Panel C: Information treatment effects									
Actuarial LE	0.01	0.01	-0.00	0.03	-0.08*	0.02	0.01	-0.17	0.32
	(0.03)	(0.02)	(0.03)	(0.05)	(0.05)	(0.08)	(0.10)	(0.12)	(0.22)
Descriptive statistics:									
Avg. pop. long. bias	-8.00	-0.50	5.93	-8.00	-0.50	5.93	-8.00	-0.50	5.93
Dep. var. mean	0.06	0.06	0.05	0.20	0.30	0.21	0.26	0.41	0.44
Observations	392	448	160	319	357	118	73	91	42

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.7

CASE A PRESENTED TO THE EXPERTS TO PREDICT KNOWLEDGE (BLOCKS 1-2)

Case ID	Gender	Age	Actuatial LE	Weight
1	man	26	82.1	.034
2	man	29	82.1	.033
3	man	31	82.1	.033
4	man	34	82.3	.034
5	man	37	82.4	.033
6	man	40	82.4	.033
7	man	42	82.5	.034
8	man	45	82.6	.033
9	man	47	82.8	.033
10	man	49	82.8	.034
11	man	52	83.2	.033
12	man	54	83.3	.033
13	man	56	83.4	.034
14	man	58	83.6	.033
15	man	59	83.8	.033
16	woman	26	86.4	.034
17	woman	30	86.4	.033
18	woman	32	86.5	.033
19	woman	34	86.4	.034
20	woman	37	86.5	.033
21	woman	39	86.6	.033
22	woman	42	86.6	.034
23	woman	45	86.6	.033
24	woman	46	86.8	.033
25	woman	49	86.9	.034
26	woman	51	87	.033
27	woman	53	87.1	.033
28	woman	55	87.2	.034
29	woman	58	87.5	.033
30	woman	60	87.6	.033

Notes: This table displays the characteristics of the cases presented to the experts in block 1 and 2 of the expert forecasts.

TABLE A.8

CASES PRESENTED TO THE EXPERTS TO PREDICT THE INFORMATION EXPERIMENT (BLOCK 3)

Case ID	Pop. Long. Beliefs	County	Gender	Age	Actuatial LE	Weight
1	70	1	man	47.5	82.5	.012109
2	70	2	man	41	82.8	.0171544
3	70	1	woman	42.71429	86.2	.0070636
4	70	2	woman	39.18182	87.1	.0110999
5	75	1	man	43.14286	82.6	.0211907
6	75	2	man	44.97059	83.4	.0343088
7	75	1	woman	43.08	86.4	.025227
8	75	2	woman	43.91667	87.2	.024218
9	80	1	man	42.27778	82.3	.0726539
10	80	2	man	42.83654	83.1	.1049445
11	80	1	woman	41.42667	86.4	.0756811
12	80	2	woman	43.77528	87.1	.0898083
13	85	1	man	44.98901	82.4	.0918264
14	85	2	man	45.10294	83.2	.0686176
15	85	1	woman	45.0303	86.5	.0998991
16	85	2	woman	44.78022	87.2	.0918264
17	90	1	man	44.68889	82.5	.0454087
18	90	2	man	42.61905	82.8	.0211907
19	90	1	woman	43.46154	86.5	.0393542
20	90	2	woman	46.32258	87.2	.0312815
21	95	1	man	45.42857	82.6	.0070636
22	95	2	man	48.5	82.9	.0020182
23	95	1	woman	44.5	86.1	.0040363
24	95	2	woman	29	86.8	.0020182

Notes: This table displays the characteristics of the cases presented to the experts in block 3 of the expert forecasts.

Appendix B. Life-Cycle Model

Consider an individual of age a who derives utility from both consumption and leisure (similar to Kalemli-Ozcan and Weil, 2010).[43] Let also ϕ denote the flow utility cost of work, interpreted as the difference between utility from leisure after retirement and utility from leisure while employed. The individual chooses consumption $c(t)$ and retirement age R to maximize future remaining lifetime utility

$$\max_{\{c(t)\}_{t\in[a,L]},\, R} \int_a^L e^{-\rho(t-a)} \ln(c(t))\, dt - \phi \int_a^R e^{-\rho(t-a)}\, dt \tag{B.1}$$

subject to the budget constraint

$$\int_a^L e^{-r(t-a)} c(t)\, dt = A(a) + \int_a^R e^{-r(t-a)} w\, dt + \int_R^L e^{-r(t-a)} \alpha w\, dt. \tag{B.2}$$

We denote by $t \in [a, L]$ the individual's time horizon, ranging from current age a to expected age at death L. The variable $A(a)$ represents assets accumulated by age a. While working (i.e., for $t \leq R$), the individual earns a constant wage w; after retirement, they receive social security benefits equal to a fraction $\alpha \in [0, 1)$ of this wage. The parameter r denotes the market interest rate, while ρ denotes the subjective discount rate.

I. Household required literacy

For the sake of simplicity, this framework assumes away uncertainty and omits the expectation operator $E[\cdot]$, which would otherwise formally capture it. Nonetheless, it is evident that expectations about several components can have substantial effects on the individual's future utility maximization problem. Abstracting from wage uncertainty – which is more directly shaped by household choices – we argue that individuals require literacy in at least three domains to form accurate expectations and make sound life-cycle decisions.

(i) Longevity literacy. Individuals' expectations about their own longevity, L, directly determine the planning horizon of the optimization problem. Forming unbiased beliefs about one's own longevity requires combining knowledge of personal health status with an understanding of healthcare developments and population longevity trends.

(ii) Pension literacy. Expectations about future state pension benefits, captured by α, as well as knowledge of the minimum retirement age, significantly influence the optimal re-

[43] We propose a continuous life-cycle framework based on Kalemli-Ozcan and Weil (2010). Relative to that model, we introduce two main modifications. First, we formulate the optimization problem from the perspective of the individual's current age a, rather than over the entire life cycle. This allows us to capture heterogeneous adjustments in consumption paths and optimal retirement age in response to changes in longevity beliefs, depending on the respondent's age. Second, we introduce social security benefits, set as a fraction α of labor income, highlighting the role of public pensions in the life-cycle optimization problem.

tirement age and consumption path. Forming accurate expectations about social security benefits and retirement eligibility requires a sound understanding of pension institutions.

(iii) FINANCIAL LITERACY. Intertemporal choices – and, consequently, the ability to correctly interpret the market interest rate r – depend on individuals' familiarity with concepts such as interest compounding and inflation, two central components of financial literacy.

II. MODEL ESTIMATION

To solve the model, we set up the Lagrangian:

$$\begin{aligned}\mathcal{L} = &\int_a^L e^{-\rho(t-a)} \ln(c(t))\,dt - \phi \int_a^R e^{-\rho(t-a)}\,dt \\ &+ \lambda \left[A(a) + \int_a^R e^{-r(t-a)} w\,dt + \int_R^L e^{-r(t-a)} \alpha w\,dt - \int_a^L e^{-r(t-a)} c(t)\,dt \right]\end{aligned} \tag{B.3}$$

The first-order condition with respect to $c(t)$ is

$$e^{-\rho(t-a)} \frac{1}{c(t)} - \lambda e^{-r(t-a)} = 0. \tag{B.4}$$

Rearranging gives us,

$$c(t) = \frac{1}{\lambda} e^{(r-\rho)(t-a)}. \tag{B.5}$$

Evaluating at $t = a$, we obtain

$$c(a) = \frac{1}{\lambda}. \tag{B.6}$$

Hence, defining $c(a) \equiv c_a$, we can write

$$c(t) = c_a e^{(r-\rho)(t-a)}, \tag{B.7}$$

where c_a denotes the level of consumption at age a, i.e., the initial consumption level of the re-optimization problem starting at age a.
Therefore,

$$\dot{c}(t) = (r - \rho) c(t), \tag{B.8}$$

where $\dot{c}(t)$ is the instantaneous rate of change of consumption over time.
The first-order condition with respect to R is

$$-\phi e^{-\rho(R-a)} + \lambda \left(e^{-r(R-a)} w - e^{-r(R-a)} \alpha w \right) = 0. \tag{B.9}$$

Equivalently,

$$\phi e^{-\rho(R-a)} = \lambda e^{-r(R-a)} w (1 - \alpha). \tag{B.10}$$

Using the consumption FOC (Equation B.4) evaluated at $t = R$,

$$\lambda e^{-r(R-a)} = e^{-\rho(R-a)} \frac{1}{c(R)}, \tag{B.11}$$

and plugging Equation B.11 into Equation B.10 we obtain the retirement condition

$$\phi = \frac{w(1-\alpha)}{c(R)}. \tag{B.12}$$

Rearranging gives us,

$$c(R) = \frac{w(1-\alpha)}{\phi}. \tag{B.13}$$

III. ERRORS IN LONGEVITY BELIEFS

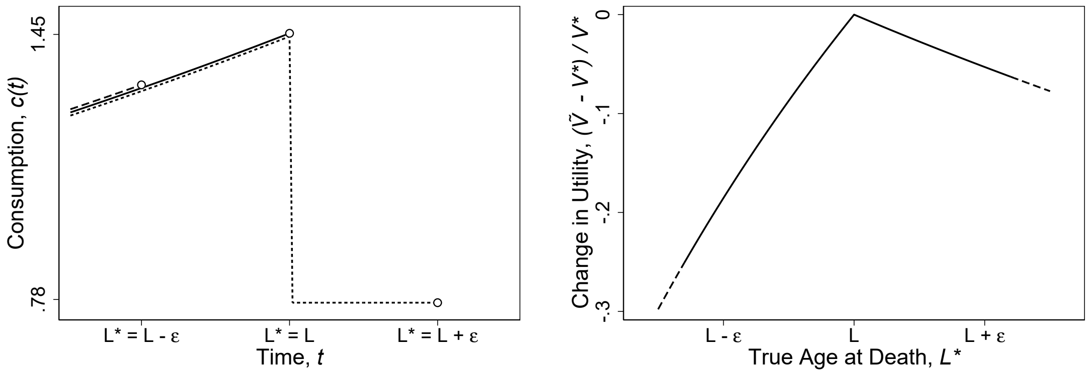
To better understand how inaccurate longevity expectations can affect the consumption path and realized lifetime utility, let L^* denote the true age at death, where, for simplicity, we assume $L^* > R$. Under the assumption that longevity beliefs are formed at age a and remain fixed thereafter, the realized consumption path follows the optimal plan solved at age a under expected longevity L, except when actual longevity differs from expectations and the planned path can no longer be sustained. Optimistic individuals, who expect to live longer than they actually do and for whom $L^* = L - \epsilon$ with $\epsilon > 0$, consume exactly as planned in each period, but for fewer years than expected. Individuals with perfect foresight, for whom $L^* = L$, follow their optimal consumption path for exactly the expected duration of life. By contrast, pessimistic individuals, for whom $L^* = L + \epsilon$, exhaust their assets at age L and subsequently experience a drop in consumption to the level of social security benefits.

Let $u(t)$ denote the instantaneous utility function, defined as $u(t) = \ln(c(t)) - \phi \cdot \mathbb{1}_{\{t \leq R\}}$, where $\mathbb{1}_{\{t \leq R\}}$ is an indicator function equal to 1 if the individual is working ($t \leq R$) and 0 if retired ($t > R$). Realized lifetime utility can therefore be expressed as the discounted sum of instantaneous utility flows generated by the consumption path $c(t)$ and retirement age R optimally chosen under expected longevity L, from the individual's current age a until the actual age at death L^*, that is $V(L, L^*) = \int_a^{L^*} e^{-\rho(t-a)} u(t)\, dt$. Losses in lifetime utility due to longevity misprediction can then be computed as the percentage difference between realized lifetime utility, $\tilde{V} = V(L, L^*)$, and potential lifetime utility, $V^* = V(L^*, L^*)$, obtained when consumption and retirement choices are optimally chosen under the true age at death L^*.

Assume an individual with a subjective discount rate slightly lower than the market interest rate (i.e., $\rho = 0.03,\ r = 0.04$) expects to die at age 85. If she dies 10 years earlier than expected (i.e., $L^* = L - \epsilon = 75$), her consumption will simply cease 10 years sooner than anticipated, as illustrated in Figure B.3a. As a result, she will have accumulated excess savings during earlier years, generating a loss in realized lifetime utility of almost 19 percent relative to the utility she could have attained had she correctly anticipated her age at death, as illustrated in Figure B.3b. If, instead, she dies 10 years later than expected (i.e., $L^* = L + \epsilon = 95$), her consumption will eventually fall to the level of pension benefits once her assets are exhausted. In this example,

FIGURE B.3

(A) CONSUMPTION PATHS (B) LIFETIME UTILITY LOSSES



Notes: These figures illustrate the consumption paths and lifetime utilities obtained by solving the maximization problem defined by equations B.1 and B.2, assuming $a = 25$, $L = 85$, $w = 1$, $r = 0.04$, $\rho = 0.03$, $\phi = 0.1823$, and $\alpha = 0.78$. The left panel displays the consumption paths under three scenarios: when the true age at death occurs 10 years earlier than expected (i.e., $L^* = L - \epsilon = 75$), exactly as expected (i.e., $L^* = L = 85$), and 10 years later than expected (i.e., $L^* = L + \epsilon = 95$). The right panel shows the utility losses associated with errors in longevity beliefs, computed as the percentage difference between realized utility, $\tilde{V} = V(L, L^*)$, and potential utility, $V^* = V(L^*, L^*)$. Realized utility is obtained by summing discounted instantaneous utility flows generated by consumption and retirement choices optimized under expected longevity L, but realized up to the true age at death L^*. Potential utility is obtained by summing discounted instantaneous utility flows generated by choices optimized under the true age at death L^* and realized over the same horizon.

we set the state pension replacement rate equal to the sample average expectation, $\alpha = 0.78$.[44] Despite the longer lifespan, realized lifetime utility is reduced by about 5 percent relative to the case in which longevity is correctly anticipated.

Although these calculations are not intended to quantify the magnitude of welfare losses, since the results depend on specific parameter assumptions, they illustrate two important points: errors in longevity beliefs generally reduce lifetime utility, and overly optimistic individuals may incur substantially larger welfare losses than pessimistic individuals in the presence of a state pension. The reason is that pessimistic individuals continue to receive state pension benefits after exhausting their assets, so their losses arise primarily from imperfect consumption smoothing. By contrast, optimistic individuals die with excessive accumulated savings and therefore forgo consumption that could have increased their lifetime utility.

On the one hand, it is worth noting that a lower pension replacement rate (e.g., 63% representing the OECD average) would leave welfare losses for optimistic individuals largely unchanged while increasing losses for pessimistic individuals, thereby making the welfare consequences of optimism and pessimism more symmetric. On the other hand, a higher market interest rate would not only make welfare losses more symmetric but also substantially larger overall, as a greater share of lifetime utility would be generated by consumption in the later years of life.

[44]The value of $\alpha = 0.78$ is derived from the survey data described in Section III. Specifically, it is computed as the average ratio between individuals' expected first net pension benefit after retirement and their expected net wage immediately before retirement.

IV. dR/dL ESTIMATION

In the following, we derive how individuals adjust their retirement plans when confronted with a change in expected life expectancy. To this end, we first express consumption at age a as a function of the remaining planning horizon and accumulated assets by substituting the optimal consumption path into the budget constraint. This allows us to derive an implicit equation that determines the optimal retirement age as a function of life expectancy and previously accumulated wealth.

Our main object of interest is how the optimal retirement age responds to marginal changes in expected age of death, because we will be able to match this theoretical predictions to our empirical results. Using the implicit function theorem, we therefore derive $\frac{dR}{dL}$, which captures how individuals update their planned retirement age in response to changes in life expectancy, conditional on assets accumulated prior to the revision of beliefs.

We start by substituting the consumption path into the budget constraint yields

$$c_a \int_0^{L-a} e^{-\rho s}\, ds = A(a) + w \int_0^{R-a} e^{-rs}\, ds + \alpha w \int_{R-a}^{L-a} e^{-rs}\, ds. \tag{B.14}$$

Hence,

$$c_a = \frac{A(a) + w \int_0^{R-a} e^{-rs}\, ds + \alpha w \int_{R-a}^{L-a} e^{-rs}\, ds}{\int_0^{L-a} e^{-\rho s}\, ds}. \tag{B.15}$$

Evaluating the integrals gives us

$$c_a = \frac{A(a) + \frac{w}{r}\left(1 - e^{-r(R-a)}\right) + \frac{\alpha w}{r}\left(e^{-r(R-a)} - e^{-r(L-a)}\right)}{\frac{1-e^{-\rho(L-a)}}{\rho}}. \tag{B.16}$$

Since

$$c(R) = c_a e^{(r-\rho)(R-a)}, \tag{B.17}$$

and the retirement condition becomes

$$\frac{A(a) + \frac{w}{r}\left(1 - e^{-r(R-a)}\right) + \frac{\alpha w}{r}\left(e^{-r(R-a)} - e^{-r(L-a)}\right)}{\frac{1-e^{-\rho(L-a)}}{\rho}} e^{(r-\rho)(R-a)} = \frac{w(1-\alpha)}{\phi}. \tag{B.18}$$

Rearranging yields

$$\begin{aligned} &\left[A(a) + \frac{w}{r}\left(1 - e^{-r(R-a)}\right) + \frac{\alpha w}{r}\left(e^{-r(R-a)} - e^{-r(L-a)}\right)\right] e^{(r-\rho)(R-a)} \\ &\quad - \frac{w(1-\alpha)}{\phi}\frac{1 - e^{-\rho(L-a)}}{\rho} = 0 \end{aligned} \tag{B.19}$$

We define the previous expression as $F(R, L; a)$:

$$F(R, L; a) = \left[A(a) + \frac{w}{r}\left(1 - e^{-r(R-a)}\right) + \frac{\alpha w}{r}\left(e^{-r(R-a)} - e^{-r(L-a)}\right)\right] e^{(r-\rho)(R-a)} - \frac{w(1-\alpha)}{\phi}\frac{1 - e^{-\rho(L-a)}}{\rho} \tag{B.20}$$

For notational convenience, let

$$B(R, L; a) = A(a) + \frac{w}{r}\left(1 - e^{-r(R-a)}\right) + \frac{\alpha w}{r}\left(e^{-r(R-a)} - e^{-r(L-a)}\right). \tag{B.21}$$

This then gives us

$$F(R, L; a) = B(R, L; a)e^{(r-\rho)(R-a)} - \frac{w(1-\alpha)}{\phi}\frac{1 - e^{-\rho(L-a)}}{\rho}. \tag{B.22}$$

Intuitively, $F(R, L; a)$ measures the difference between the left-hand side and right-hand side of the retirement condition after substituting in the optimal consumption path and the budget constraint. Hence, the optimal retirement age is the value of R that sets this difference equal to zero. In other words, R is chosen such that the consumption level implied by lifetime resources and the planned retirement date is exactly consistent with the first-order condition for retirement. Thus, the optimal retirement age satisfies

$$F(R, L; a) = 0. \tag{B.23}$$

From the implicit function theorem we know that

$$\frac{dR}{dL} = -\frac{F_L}{F_R}. \tag{B.24}$$

The partial derivative with respect to L is

$$F_L = \alpha w e^{-r(L-a)} e^{(r-\rho)(R-a)} - \frac{w(1-\alpha)}{\phi} e^{-\rho(L-a)}. \tag{B.25}$$

The partial derivative with respect to R is

$$F_R = w(1-\alpha)e^{-r(R-a)}e^{(r-\rho)(R-a)} + (r-\rho)B(R, L; a)e^{(r-\rho)(R-a)}. \tag{B.26}$$

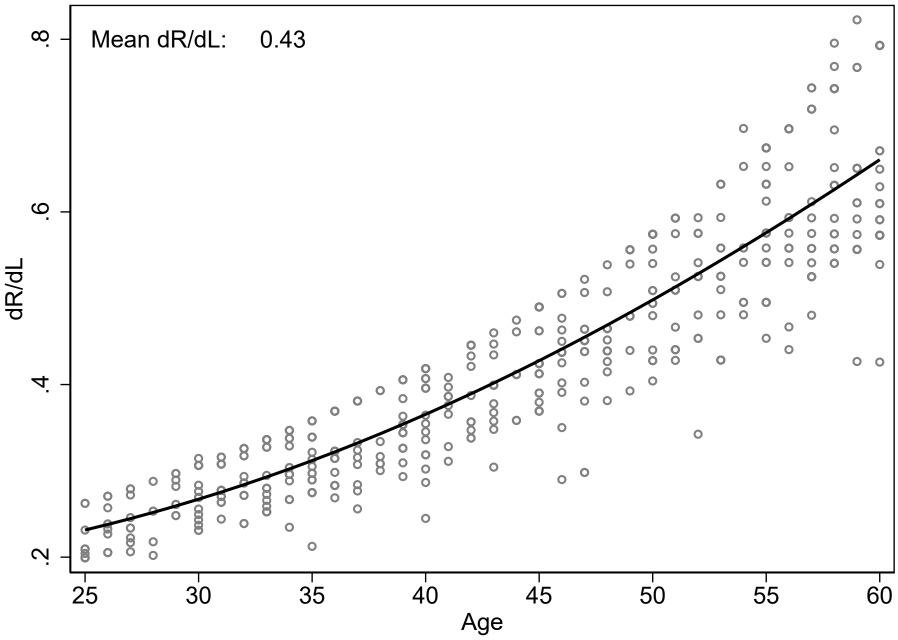
Bringing the two together gives us:

$$\frac{dR}{dL} = -\frac{\alpha w e^{-r(L-a)} e^{(r-\rho)(R-a)} - \frac{w(1-\alpha)}{\phi} e^{-\rho(L-a)}}{w(1-\alpha)e^{-r(R-a)}e^{(r-\rho)(R-a)} + (r-\rho)B(R, L; a)e^{(r-\rho)(R-a)}}. \tag{B.27}$$

The final expression describes how the optimal retirement age responds to a marginal change in expected age of death, conditional on current age a, accumulated assets $A(a)$, and the model

FIGURE B.4

PREDICTED EFFECT OF LONGEVITY BELIEF REVISIONS ON RETIREMENT AGE



Notes: The figure presents scatter plots and a fractional polynomial fit of individual dR/dL by age. The prediction of dR/dL is based on the maximization problem reported in equations B.1 and B.2 and solved in Appendix B. We then estimate dR/dL for each untreated individual in our sample using their age, labor income, and own longevity beliefs. We additionally assume $r = 0.04$, $\rho = 0.03$, $\phi = 0.1823$, and $\alpha = 0.78$.

parameters w, α, r, ρ, and ϕ. In other words, it captures how individuals update their planned retirement age when life expectancy changes, taking as given the wealth that has already been accumulated prior to the revision of beliefs.

In general, the model does not admit a closed-form analytical solution for the optimal retirement age. The retirement condition is defined implicitly by $F(R, L; a) = 0$, and the comparative static dR/dL must therefore be evaluated at the corresponding numerical solution for R. We thus solve the model numerically. The code used to do so is part of the replication package.

To derive a simple prediction from the model for our sample, we compute dR/dL for all (untreated) individuals described in Section III. In particular, we use individuals' age – ranging from 25 to 60 – and their own longevity beliefs. We additionally assume $\alpha = 0.78$, equal to the sample average, together with $r = 0.04$ and $\rho = 0.03$. The flow utility cost of work is set to $\phi = 0.1823$ so that the average optimal retirement age matches the sample average of 66 years.

Figure B.4 illustrates how the model predicts changes in longevity beliefs to translate into changes in the optimal retirement age, dR/dL, across individuals' ages in our sample. The model predicts a sizeable average effect of longevity belief revisions on retirement age of 0.43, implying that an additional year in expected longevity should increase the retirement age by roughly five months. Notably, the effect of a one-year revision in longevity expectations varies substantially with age. Individuals aged 25 – at the beginning of their working life – would need to adjust retirement age by approximately 0.2 years, whereas individuals aged 60 – closer to retirement – would need to adjust retirement age by more than 0.6 years.

This increasing effect with respect to individuals' age arises from the increasing consumption path implied by the assumed values of the market interest rate ($r = 0.04$) and the subjective discount rate ($\rho = 0.03$). When consumption path is instead flat (i.e., $r = \rho$), the sensitivity of retirement age to longevity beliefs, dR/dL, remains constant across age.

For the execution of the survey, SWG provided the client with 15 CATI (Computer-Assisted Telephone Interviewing) stations. SWG has ensured the presence of at least one internal supervisor for every eight interviewers, responsible for monitoring the progress of the interviews.

The SWG Fieldwork center is equipped with a virtually unlimited number of telephone lines (the telephone lines are connected to Infomaster data centers: the number of lines initially allocated to SWG is 200, but there is no predetermined upper limit, and this can be adjusted in real time according to workload requirements), and 100 computerized telephone stations that allow for integrated management of both data and voice during outbound and inbound services, real-time online monitoring of ongoing services, and the processing of reports and statistical documentation of calls.

Data collection is monitored through constant real-time supervision in compliance with ASSIRM quality standards. This includes campaign management, monitoring and updating interview statuses and appointments, and the processing of tables. Quality control of the campaign is therefore comprehensive. The goal of the interview campaign is to guarantee the client the highest data quality and the most precise sampling, while minimizing dropouts and the need for substitutions. To achieve this, SWG implements a precise quality verification system concerning:

- proper identification of the respondent;
- correct administration of the questions, including measures to avoid bias caused by interviewer effects;
- real-time control of conducted interviews through live listening by in-room supervisors.

Participants were encouraged to answer truthfully based on their knowledge and were informed that their involvement was completely voluntary. During the interviews, interviewers strictly refer to the questionnaire based on the rules provided during training sessions. They may provide respondents with requested information to improve response quality, but they must not alter the wording or sequence of the questions in any way. The interviewer reads each question exactly as it appears on screen and, where applicable, the response options as well. If the text is not understood, the interviewer rereads it in full, ensuring that the respondent has comprehended it.

The first contact takes place between Monday and Friday, between 4:30 PM and 8:30 PM. Modifications to the indicated schedule can be agreed upon with the client if new arrangements are deemed useful for better execution of the survey. The order in which calls are made take into account scheduled appointments and their completion according to the established calendar. Appointments falling within the same time slot are handled based on a priority order coded by the interviewer who scheduled them.

The data collection includes the logging of all unsuccessful contact attempts.

APPENDIX D. QUESTIONNAIRE

1. {Not directly asked} In what language was this interview conducted?
   Answers: Italian; German
2. In which county do you currently reside?
   Answers: Bolzano; Trento
3. What is your municipality of residence?
   Answers: [Open-ended]
4. What gender do you identify with?
   Answers: Male; Female; Other
5. How old are you?
   Answers: [Open-ended]
6. {Not directly asked} Age Group
   Answers: 25-34; 35-44; 45-60
7. What is your current marital status?
   Answers: Married; Living with a partner; Widowed; Separated; Divorced; Single (never married)
8. Do you have children? If so, how many?
   Answers: 1; 2; 3; 4; 5; 6; 7; I do not have children
9. What is the highest level of education you have completed?
   Answers: None; Elementary school; Middle school; Vocational school (3 years); High school diploma; Bachelor's degree; Master's degree; Doctorate or post-master specialization
10. (If "Married" or "Living with a partner" to 7) What is the highest level of education your spouse or partner has completed?
    Answers: None; Elementary school; Middle school; Vocational school (3 years); High school diploma; Bachelor's degree; Master's degree; Doctorate or post-master specialization
11. Compared to other people of your same age and gender in your province, how would you describe your overall health?
    Answers: Much worse; Worse; About the same; Better; Much better
12. Which of these language groups do you consider yourself a part of?
    Answers: German; Italian; Ladin; Other (please specify); I do not feel I belong to any specific language group
13. (If "German"; "Italian"; "Ladin"; or "Other" to 12) How strongly do you feel a sense of belonging to this group?
    Answers: Very strong; Somewhat strong; Not very strong; Not strong at all; I don't know
14. Have you ever been employed?
    Answers: Yes; No
15. (If "Yes" to 14) At what age did you start your first job? (Please do not include summer jobs, internships, or short-term work placements.)
    Answers: [Open-ended]
16. Are you currently employed? (Specifically, have you performed any paid work in the past month?)
    Answers: Yes; No
17. (If "Yes" to 16) Is your primary occupation as an employee or are you self-employed?
    Answers: Employee; Self-employed

18. (If "Employee" to 17) What was your primary occupation?
    Answers: Laborer or similar (including hourly workers, apprentices, or retail clerks); Office worker/Staff; Teacher or faculty; Manager/Mid-level executive; Senior executive/High-ranking official/University professor/Judge
19. (If "Self-employed" to 17) What type of self-employment do you have?
    Answers: Freelancer; Sole proprietor; Independent contractor/Tradesperson (e.g., craftsman); Business owner or partner; Unpaid family worker in a family business; Gig worker/Occasional contractor/Consultant
20. (If "No" to 16) What is your current status?
    Answers: Looking for first job; Unemployed; Homemaker; Financially independent/Wealthy; Retired; Retired due to disability; Student; Volunteer; Other
21. (If "Yes" to 16) In which sector do you work?
    Answers: Agriculture; Hospitality/Tourism; Construction; Manufacturing; Healthcare; Retail; Wholesale; Banking/Insurance; Services; Transportation; Public Administration; Education
22. (If "Yes" to 16) Are you:
    Answers: Full-time; Part-time
23. (If "Yes" to 16) What type of contract do you have?
    Answers: Permanent/Indefinite; Fixed-term/Temporary
24. (If "Yes" to 16 OR "Looking for first job" or "Unemployed"to 21) On a scale of 0 to 100, what is the probability that you will be unemployed at some point in the next 12 months? (0 means no chance; 100 means certain.)
    Answers: 0%; 1%-10%; 11%-20%; 21%-30%; 31%-40%; 41%-50%; 51%-60%; 61%-70%; 71%-80%; 81%-90%; 91%-100%
25. What was your total net household income in 2023 (including wages, self-employment earnings, and rental income, after taxes)?
    Answers: Under €5,000; €5,001-€10,000; €10,001-€15,000; €15,001-€20,000; €20,001-€30,000; €30,001-€40,000; €40,001-€50,000; €50,001-€60,000; €60,001–€70,000; €70,001-€100,000; €100,001-€150,000 Over €150,000;
26. What percentage of your total income comes from employment (wages or self-employment)?
    Answers: 0%; 1%-10%; 11%-20%; 21%-30%; 31%-40%; 41%-50%; 51%-60%; 61%-70%; 71%-80%; 81%-90%; 91%-99%; 100% (All income comes from work)
27. (If "Married" or "Living with a partner" to 7) What is your spouse's or partner's current employment status?
    Answers: Unemployed and looking for work; Unemployed and not looking for work; Homemaker; Financially independent; Retired; Retired due to disability; Student; Volunteer; Other; Employed
28. (If "Married" or "Living with a partner" to 7 AND "Employed" to 27) What was your spouse's or partner's total net income in 2023?
    Answers: Under €5,000; €5,001-€10,000; €10,001-€15,000; €15,001-€20,000; €20,001-€30,000; €30,001-€40,000; €40,001-€50,000; €50,001-€60,000; €60,001–€70,000; €70,001-€100,000; €100,001-€150,000; Over €150,000; I don't know
29. In your opinion, how does your family's total net annual income compare to the income of most other families?
    Answers: Much higher than average; Slightly higher than average; About average; Slightly below average; Much lower than average
30. Does your household own any real estate (including your primary home, other buildings, or land)?
    Answers: Primary residence; Other real estate/buildings/land; No real estate owned
31. Overall, how does your household's total wealth (including real estate and financial assets) compare to the average household in your region?
    Answers: Much higher than average; Slightly higher than average; About average; Slightly below average; Much lower than average

32. What percentage of your monthly income goes toward paying off a mortgage or other loans?
    Answers: [Open-ended]
33. What percentage of your monthly income are you able to save (after paying for living expenses and debt)?
    Answers: [Open-ended]
34. Many people save to prepare for a major planned event, such as buying a home or a car.
    Answers: [Open-ended]
35. Is your current savings level above or below the amount you would like to have?
    Answers: Above; About right; Below
36. (If "Below" to 35) Are you actively saving to reach that target amount?
    Answers: Yes; No
37. Imagine the government sends you an unexpected, one-time payment of €1,000. How much would you use for:
    - Purchasing consumer goods or services? **Answers:** [Open-ended]
    - Purchasing durable goods (e.g., appliances, electronics)? **Answers:** [Open-ended]
    - Personal savings? **Answers:** [Open-ended]
    - Paying down debt? **Answers:** [Open-ended]
38. Do you have any of the following insurance policies?
    Answers: Life insurance; Accidental death insurance; Private health insurance; None of the above
39. At what age do you expect to retire?
    Answers: [Open-ended]
40. (If "Married" or "Living with a partner" to 7) Who is primarily responsible for making retirement planning and savings decisions in your household?
    Answers: I make most of the decisions; My partner and I make decisions jointly; My partner makes most of the decisions; we each handle our own finances separately; A third party (e.g., an advisor) makes the decisions
41. (If "My partner makes most of the decisions" to 40) Why does your partner primarily make these decisions?
    Answers: My partner has more financial knowledge; My partner has more financial resources; My partner has more time; This is how we have divided responsibilities
42. (If "I make most of the decisions" to 40) Why do you primarily make these decisions?
    Answers: I have more financial knowledge; I have more financial resources; I have more time; This is how we have divided responsibilities
43. How do you plan to fund your lifestyle after retirement?
    Answers: Public social security; Contractual supplementary retirement plan; Open supplementary retirement plan; Selling financial assets; Selling real estate or other assets; Income generated from investments; Support from a spouse or partner; Support from children or family; Personal savings; Continuing to work; Business ownership income; Public benefits/subsidies; I don't know; Other
44. What do you expect your monthly net salary to be immediately before you retire?
    Answers: [Open-ended]; I do not expect to qualify for retirement.
45. What do you expect your monthly net income to be from public social security?
    Answers: [Open-ended]
46. What do you expect your monthly net income to be from your company retirement plan?
    Answers: [Open-ended]
47. Are you currently, or have you ever been, a member of a supplementary retirement plan?
    Answers: Yes; No

48. (If "No" to 47) What are your main reasons for not joining a supplementary retirement plan?
    Answers: I can't afford it; I don't trust private retirement funds; It's too early for me to think about it; I prefer to keep my severance/savings with my employer; I don't want to make an irreversible financial choice; I think social security will be enough; My employer doesn't offer a match; I prefer to invest independently
49. (If "Yes" to 47) What type of retirement plan do you have?
    Answers: Laborfonds; Other contract supplementary pension fund; Profi; Raiffeisen; Plurifonds; Other open supplementary pension fund; Individual retirement account (PIP)
50. (If "Yes" to 47) Which investment strategy did you choose?
    Answers: Mainly equity (e.g., Dynamic line); Equity and bond balanced (e.g., Balanced line); Mainly bonds (e.g., Conservative line); Guaranteed/Safe line; I don't know
51. (If "Yes" to 47) In what year did you begin contributing to this plan?
    Answers: [YYYY]
52. (If "Laborfonds" or "Other contract supplementary pension fund" to 49) What percentage of your salary do you contribute to this plan?
    Answers: [Open-ended]
53. (If "Profi" or " Raiffeisen" or "Plurifonds" or "Other open supplementary pension fund" or " Individual retirement account (PIP)" to 49) What has been your average annual contribution over the last three years?
    Answers: [Open-ended]
54. (If "Yes" to 47) Have you ever taken an early withdrawal or redeemed part of your retirement fund?
    Answers: Yes; No
55. (If "Yes" to 47) Upon retirement, how would you like to receive your private retirement funds?
    Answers: As a lump-sum payment; As a monthly annuity (lifetime income); Keep the fund active and continue contributing; I don't know
56. (If "Yes" to 47) What net monthly amount do you expect to receive from your supplementary retirement plan?
    Answers: [Open-ended]
57. Overall, how satisfied are you with your financial planning for retirement on a scale of 0 to 10?
    Answers: 0 to 10; I haven't thought about it/planned anything yet
58. (If "I haven't thought about it" to 57) How satisfied are you with the fact that you haven't started planning yet?
    Answers: 0 to 10
59. On a scale of 0 to 10, how would you rate your knowledge of retirement systems and issues?
    Answers: 0 to 10
60. Do you know how social security benefits are currently calculated for new employees?
    Answers: Yes, with a contribution-based system, i.e., based on all contributions paid during the working period; Yes, with a earnings-based system, i.e., based only on salaries and contributions from the final years of work; Yes, with a mixed system, i.e., partly contribution-based and partly earnings-based; Don't know
61. In your opinion, the social security contributions currently paid by workers are:
    Answers: Used to pay for current retirees; Saved in individual accounts and invested in markets; Partly for current retirees and partly saved for the worker; I don't know
62. (If "Male" to 4) In your opinion, what is the average life expectancy (i.e., age at death) for a [respondent's age] years-old man living in [respondent's county]?
    Answers: [Open-ended]
63. (If "Female" to 4) In your opinion, what is the average life expectancy (i.e., age at death) for a [respondent's age] years-old woman living in [respondent's county]?
    Answers: [Open-ended]

64. (CONTROL GROUP) Based on the latest available data, the National Statistical Office provides estimates of average life expectancy (i.e., age at death) by gender, age, and county of residence. Do you think this information is relevant to you?
Answers: Yes; No

65. (TREATMENT GROUP) Based on the latest available data, the National Statistical Office estimates that the average life expectancy (i.e., age at death) for a [respondent's age] years-old [respondent's gender] living in [respondent's county] is [official life expectancy specific to the gender, age and country of residence of the respondent]. Do you think this information is relevant to you?
Answers: Yes; No

66. At what age do you plan to retire?
Answers: [Open-ended]

67. (If "No" to 47) Do you plan to join a supplementary retirement plan in the future?
Answers: Yes; No

68. (If "Profi" or " Raiffeisen" or "Plurifonds" or "Other open supplementary pension fund" or " Individual retirement account (PIP)" to 49) How much do you plan to contribute annually to your open supplementary retirement fund in the future?
Answers: [Open-ended]

69. (If "Laborfonds" or "Other contract supplementary pension fund" to 52) What percentage of your salary do you plan to contribute to your contract supplementary retirement fund in the future?
Answers: [Open-ended]

70. (If "Yes" to 47 or "Yes" to 67) Which option interests you most regarding your future retirement fund?
Answers: Lump-sum withdrawal; Monthly annuity; Keeping the fund active; I am not sure yet

71. How satisfied are you with your level of retirement planning?
Answers: 0 to 10; I haven't planned anything

72. (If "I haven't planned anything" to 71) How satisfied are you with the fact that you haven't planned yet?
Answers: 0 to 10

73. Would you be interested in learning more about financial and retirement issues through:
    - Interactive lessons or seminars? **Answers:** Yes; No
    - Information brochures or guides? **Answers:** Yes; No
    - Books or manuals? **Answers:** Yes; No
    - Newspaper articles or inserts? **Answers:** Yes; No
    - Television programs? **Answers:** Yes; No
    - Radio programs or podcasts? **Answers:** Yes; No
    - Recorded video lessons? **Answers:** Yes; No

74. Would you like to receive an informational sheet on retirement planning from the University of Bolzano or Trento?
Answers: Yes. If yes, please indicate your email address; No

75. To what extent do you agree with the following statements? Please indicate your answer on a scale of 0 to 10 (0 = I completely disagree, 10 = I completely agree).
    - "I generally assume people have good intentions." **Answers:** [Scale 0-10]
    - "I generally assume the national government has good intentions." **Answers:** [Scale 0-10]
    - "I generally assume the provincial government has good intentions." **Answers:** [Scale 0-10]

- "I generally assume banks and financial advisors have good intentions." **Answers:** [Scale 0-10]

76. On a scale of 0 to 10, how willing are you to take financial risks? Where 0 means that you are “absolutely not willing to take risks” and 10 means that you are “completely willing to take risks”.
    Answers: [Scale 0-10]

77. On a scale of 0 to 10, how willing are you to sacrifice current benefits to gain more in the future? Where 0 means "not at all willing to do it" and 10 means "very willing to do it."
    Answers: [Scale 0-10]

78. Suppose you had €100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?
    Answers: More than €110; Exactly €110; Less than €110; I don’t know

79. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
    Answers: More than today; The same; Less than today; I don’t know

80. Please tell me whether this statement is true or false. ‘Buying a single company’s stock usually provides a safer return than a stock mutual fund’.
    Answers: True; False; I don’t know

81. What do you estimate your own life expectancy (i.e., age at death) to be?
    Answers: [Open-ended]

Appendix E. Expert Survey

Newsletter Sample

```
Subject: Request for Expert Forecasts - Longevity Beliefs and Pension Knowledge

Dear Colleague,

Given your expertise, we invite you to take part in a short, anonymous survey
- lasting no more than 5 minutes - in which you'll be asked to forecast how
individuals perform on pension-related knowledge and how they perceive their own
life expectancy.

As a token of appreciation, the research team will donate €1 to Save the Children
for every completed survey (up to a total of €200).

This project involves Claudia Curi, Andreas Dibiasi, Francesco Nicolini, Mirco
Tonin (Free University of Bozen-Bolzano), and Matteo Ploner (University of
Trento).

To participate, please follow this link:
Take the survey
Or copy and paste the URL below into your internet browser:
Link here

We sincerely value your time and thoughtful contribution to our survey. If you
have any inquiries or require additional information, please do not hesitate to
contact one of the researchers involved in the project.

Best regards,
Claudia Curi, Andreas Dibiasi, Francesco Nicolini, Matteo Ploner, and Mirco Tonin
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Email Sample

```
Subject: Request for Expert Forecasts - Longevity Beliefs and Pension Knowledge

Dear Colleague,

We are contacting you as an academic expert who has published in the fields of
retirement, aging, or longevity.

Given your expertise, we invite you to take part in a short, anonymous survey
-lasting no more than 5 minutes- in which you'll be asked to forecast how
individuals perform on pension-related knowledge and how they perceive their
own life expectancy.

As a token of appreciation, the research team will donate €1 to Save the Children
for every completed survey (up to a total of €200).

This project involves Claudia Curi, Andreas Dibiasi, Francesco Nicolini, Mirco
Tonin (Free University of Bozen-Bolzano), and Matteo Ploner (University of
Trento).

Follow this link to the Survey:
Take the survey
Or copy and paste the URL below into your internet browser:
Link here

We sincerely value your time and thoughtful contribution to our survey. If you
have any inquiries or require additional information, please do not hesitate to
contact one of the researchers involved in the project.

Best regards,
Claudia Curi, Andreas Dibiasi, Francesco Nicolini, Matteo Ploner, and Mirco Tonin
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QUALTRICS PAGES

FIGURE E.5
BLOCK 1

[1/3] We previously surveyed 1,000 adults about life expectancy.
Please predict the answers our previous participants gave about (i) the life expectancy of people of their same age, gender, and county of residence, and (ii) their own life expectancy.

Consider a participant who is a 49-year-old man living in Northern Italy with an actuarial life expectancy (i.e., expected age at death) of **82.9 years**. Note that we did not provide the participant with information about actuarial life expectancy.

At what age does the participant believe that, on average, **an individual of his same age, gender, and county of residence will die**?

At what age does the participant believe that **he will die**?

→

FIGURE E.6
BLOCK 2

[2/3] In the same survey, we asked a short set of questions to assess the financial literacy and pension knowledge of participants. Consider the same participant of the previous question: a 49-year-old man living in Northern Italy.

Financial literacy was measured with three standard questions on (i) compound interest, (ii) inflation, and (iii) risk diversification. More info.
How many of these three questions do you think the participant answered correctly?
(Answers can range from 0 to 3.)

Pension knowledge was assessed with two questions about the Italian state pension system: (i) how benefits are determined and (ii) how the system is financed. More info.
How many of these two questions do you think the participant answered correctly?
(Answers can range from 0 to 2.)

→

FIGURE E.7
BLOCK 3

[3/3] In the same survey, some participants were provided with official actuarial estimates of life expectancy, specific to their age, gender, and county of residence.
Please predict the effect of providing (versus NOT providing) actuarial life expectancy information to participants on their longevity beliefs.

Consider a participant (not the same of the previous question) who estimated the average longevity for people of their same age, gender, and county of residence to be **75 years**.

Assume the participant has **NOT RECEIVED** any information about the official life expectancy estimates. At what age does the participant believe to die?

Assume the participant has **RECEIVED** information that the official life expectancy for an individual of their same age, gender, and county of residence is **87.2 years**. At what age does the participant believe to die?

→