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Un(comfortably) numb: hearing loss, relational goods and subjective wellbeing

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Eudaimonic wellbeing and life expectancy

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Abstract

We investigate the relationship between eudaimonic wellbeing (sense of life) and subjective survival probability (SSP), a proxy of self-assessed life expectancy. We find a robust and strong positive relationship after controlling for self-assessed health, coupled with a negative effect of sense of life on mortality. The magnitude of the first effect is relevant since the minimum difference between individuals declaring highest versus lowest sense of life is a 16-point higher probability of being alive at the target age. The combination of our two main findings implies that when respondents declare high sense of life they attribute to themselves lower mortality risk and they are correct.

JEL Numbers: I31, I14.

Keywords: purpose in life, subjective survival probability, mortality.

1. Introduction

We live an era of dramatic progress in medical treatments that is not uniformly spread across individuals due to their uneven access to health services. This process is inevitably leading to increased heterogeneity in life expectancy.¹ The economic literature has shown that life expectancy is a crucial driver of economic choices with strong and significant effects on health and retirement expenditures and timing of retirement and savings decisions through life cycle effects (Coile et al., 2002; Gan et al., 2004; Hurd et al., 2005; Bloom et al., 2004; Delavande and Willis, 2007; Salm, 2010) given that individuals with expected longer life horizons are likely to save more in order to finance a longer expected post-retirement life span (Hurd et al., 1998; Alessie and Kapteyn, 2001; Bloom et al., 2004). In view of these considerations research on a specific focus of life expectancy,

¹ The 2019 Oxfam report shows that the life expectancy gap between the richest areas and the suburbs of San Paolo in Brazil goes up to 25 years (79 against 54 years).

represented by the self-assessed life horizon, is of particular relevance since what affects consumption, savings and retirement decisions is the personal view on life expectancy more than the statistically estimated “objective” survival probability.

Previous contributions showed that subjective survival probabilities are affected by socio-demographic factors (Mirowsky and Ross, 2000; Khwaja et al., 2007; Popham and Mitchell, 2006; Delavande and Rohwedder, 2011), studied correlation between them and actual survival tables (Hamermesh, 1985; Hurd et al., 2005; Elder, 2007) and put in evidence that they have predictive power on individual’s actual survival (Hamermesh, 1985; Perozek, 2008).

Our paper innovates with respect to this literature by investigating the effect on subjective survival probabilities of a fundamental and neglected variable such as eudaimonic wellbeing (sense of life).

We find that this variable has a strong and significant effect on our dependent variable and, at the same time, a significant impact on mortality. The magnitude of the first effect is highly relevant since the minimum estimated difference between individuals declaring highest versus lowest sense of life is a 7 percent higher probability of being alive at the target age. The two combined findings on subjective survival probability and actual mortality indicate that when respondents with often sense of life attribute to themselves relatively higher survival probabilities they are not wrong.

2. Eudaimonic wellbeing and our research hypothesis

Eudaimonic wellbeing is probably the less thoroughly investigated among the four main dimensions trying to capture the different nuances of happiness and subjective wellbeing. The first two (negative and positive affect) are more closely related to its hedonic and affective dimension measuring what people feel or have felt predominantly in the recent past. The life satisfaction question, most commonly used in the literature, captures instead the cognitive dimension and requires a reflection of the respondents on several dimensions of their life that are likely to include, among others, an assessment of their past life events and their expectations about the future. Eudaimonic wellbeing

traces back to the Aristotle's philosophy (expressed mainly in the *Nicomachean Ethics*) of good living based on the idea that not all stimuli of pleasure should be followed and satisfied since life sense depends on following one's own *daimon* and full potential through a virtuous life. Eudaimonic wellbeing therefore relates more to the concept of "freedom for" than merely to that of "freedom of" as it implies also training and investment in order to pursue more effectively one's own goals.

Sense of life measured by a survey question in our paper actually captures the specific dimension of eudaimonic wellbeing related to the capacity of the individual to give meaning to one's own life.² It also relates to the idea that human beings are "sense searchers" and their capacity of giving meaning to what is around them is essential for their life flourishing. The concept of individuals as sense searchers integrates the standard utility maximising approach by suggesting that satisfaction can not only rise because we consume goods that we like, but also because we enjoy the fact that we find sense in life and that our life conduct makes sense. In this respect eudaimonic wellbeing and, more specifically, the sense of life component captured here relates more closely than life satisfaction and affective measures of subjective wellbeing to self-fulfillment and capacity to make one's own goals achieved or achievable. Those described above are the reasons why we consider this variable as the most strictly relevant when measuring the impact of subjective wellbeing on health.

Several contributions in the medical empirical literature investigated the effect of eudaimonic wellbeing on mortality. The first group of empirical studies focused mainly on US and Japanese samples where the Japanese correspondent of purpose of life is the word *ikigai*, which means "a life worth living." Krause (2009), Boyle et al. (2009) and Hill and Turiano (2014) find that purpose of life reduces mortality risk in US respondents after controlling for standard longevity predictors. In a

² Ryff (1989) identifies the six dimensions of eudaimonic wellbeing in: purpose in life, personal growth, positive relations with others, environmental mastery, self-acceptance and autonomy. The question about life sense relates strictly with purpose in life but also with self-acceptance. This is because sense and purpose do not exactly coincide. Individuals may acknowledge that they do not have a strong purpose in their life but that life in general has sense.

mixed sample with US and Japanese data Cohen et al. (2015) find that eudaimonic wellbeing reduces by one fifth mortality.

Our paper is the first to analyse in this literature whether results on the effects of eudaimonic wellbeing on mortality find correspondence in a subjectively perceived effect on subjective survival probability. As already mentioned above, the specific interest in this original approach is related to the fact that subjective survival probability more than objective group specific mortality is what drives individual social and economic choices.

3. The data sources

An inquiry on the determinants of life expectancy makes more sense if run on that portion of the elders on which crucial factors affecting life expectancy, such as chronic illnesses, are more frequent and expected to matter more. This is why we choose as source of data the “Survey of Health, Ageing and Retirement in Europe (SHARE)”³, a panel dataset collecting information on more than 45,000 European (plus Israeli) respondents aged 50 and above. The database contains rich and articulated information on all kinds of diagnosed pathologies, self-reported symptoms and indicators of physical and mental functionality, together with ample information on income, wealth, job status, marital status, household characteristics and social activities of the respondents. Information is collected on

³ This paper uses data from SHARE Waves 2, 4, 5 and 6 (DOIs: 10.6103/SHARE.w1.610, 10.6103/SHARE.w2.610, 10.6103/SHARE.w4.610, 10.6103/SHARE.w5.610, 10.6103/SHARE.w6.610), see Börsch-Supan et al. (2013) for methodological details. SHARE is a panel data on health, socio-economic status, and the social and family networks of 12 to 27 countries, in the first wave 12 then increased up to 21 in the sixth wave. In our analysis, we used 4 regular panel waves of SHARE which covers a time horizon from 2006 to 2015. The unused first and third waves do not have data on our crucial variables in our analysis. The surveys have been funded by European Commission and the Commission's Directorate-General for Employment, Social Affairs and Inclusion. Additional funding has been taken from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging and from various national funding sources (see www.share-project.org).

respondents from representative samples at national level covering 21 countries: Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden and Switzerland.

Our dependent variable is subjective survival probability measured through the question “What are the chances you will live to the age “T” or more?” to which the answer can range from 0 to 100 where 0 indicates “absolutely no chance” and 100 indicates “absolutely certain”. The target age “T” formulated by the interviewer depends on the age of the respondent: it is equal to 75 for those aged 50–65, to 80 for those aged 66–70, to 85 for those aged 71–75, to 90 for those aged 76–80, to 95 for those aged 81–85, to 100 for those aged 86–95, to 105 for those aged 96–100, to 110 for those aged 101–105 and to 120 for those aged above 104. Based on the demand structure, the difference between the target and current age (forecast horizon) of the respondent to evaluate his/her subjective survival probability should not be less than five and greater than 25 for any ages, and not higher than 15 for ages more than 64. Under this general variable construction limits, we remove the forecast horizons deviating from this methodology as they are most likely by virtue of an ex-post correction that definitely might have affected the answers of the respondents.⁴ Since the forecast horizon is different for each respondent and it is very important for them to assess their subjective survival probabilities, it is used as a control variable in our estimations.

The most important variable on the right hand side is the eudaimonic measure of subjective wellbeing measured through the following question calculated on a 1-4 scale “*How often do you feel that your life has meaning?*” to which four possible answers are allowed “*often, sometimes, rarely, never*”.

Compared to the most used variable measuring the cognitive dimension of subjective wellbeing (the

⁴ In rare cases (e.g. if age was ex post corrected due to an interviewer remark) the gap between age and target age may deviate from this rule. See http://www.share-project.org/fileadmin/pdf_documentation/SHARE_release_guide_6-1-0.pdf: accessed on 24/03/2019. The target ages are assigned to missing values for observations which are considerably deviating from this rule.

0-10 life satisfaction variable) the SHARE eudaimonic wellbeing measure has the advantage of linking any number in the scale to an adjective expressing a different intensity of sense of life making therefore orientation on the scale simple for the respondent. Another advantage is in the time frequency measure aimed to reduce the observed dependence of subjective wellbeing measures expressed in a given moment in time from contemporary external conditions (ie. weather, mood of the respondent, etc.).

4. Empirical findings

Our sample is almost gender balanced with a slight female prevalence (around 55 percent). Respondents have on average around lower secondary or upper secondary education level and household size is on average composed of 2.2 members. Only 26 percent of respondents declare very good or excellent health, while just 10 percent poor health (the majority of the sample being between good and fair). 39 percent report high blood pressure. Respondents are distributed across 21 countries and 4 waves.

In order to test our research hypothesis on the nexus between eudaimonic wellbeing and subjective survival probability we estimate the following model:

$$\begin{aligned}
(1) \quad SSP_{i,t} = & \alpha_0 + \sum_b \beta_b DLife\ sense_{i,t} + \alpha_1 Forecast\ horizon_{i,t} + \alpha_2 Male_{i,t} + \sum_d \gamma_d DAge\ class_{i,t} \\
& + \sum_f \delta_f DEducation\ status_{i,t} + \alpha_3 Log(1 + Income)_{i,t} + \alpha_4 Household\ size_{i,t} \\
& + \alpha_5 Number\ of\ Children_{i,t} + \sum_g \vartheta_g DMarital\ Status_{i,t} + \sum_j \lambda_j DJob\ Status_{i,t} \\
& + \sum_k \mu_k DSport\ activity_{i,t} + \sum_l \nu_l DSelf\ health_{i,t} + \sum_m \xi_m DAdla_{i,t} + \sum_n \rho_n DIadla_{i,t} \\
& + \alpha_6 UnderWeight_{i,t} + \alpha_7 Obese_{i,t} + \alpha_8 MaxGrip_{i,t} + \alpha_9 NChronicDiseases_{i,t} \\
& + \alpha_{10} Diabetes_{i,t} + \alpha_{11} Heart\ attack_{i,t} + \alpha_{12} HighPressure_{i,t} + \alpha_{13} Stroke_{i,t} \\
& + \alpha_{14} LungDisease_{i,t} + \alpha_{15} Parkinson_{i,t} + \sum_p \sigma_p Country_i + \sum_q \tau_q Wave_t + \varepsilon_{i,t}
\end{aligned}$$

where the dependent variable (SSP) measures the probability, self-assessed by the i -th respondent at wave t , of being alive at the target age. Our main regressor of interest is a group of dummies (*DLifeSense*) measuring how often the respondent believes that her/his life makes sense (rarely, sometimes, often), with never being the omitted benchmark. Among controls *Forecast horizon* is a variable measuring the distance between respondent's age and target age,⁵ *Male* is a (0/1) gender dummy taking value one if the respondent is male, five-year dummies for age classes are introduced to take into account the nonlinear effect of age on the dependent variable, education status is measured by the ISCED classification dummies (for full variable details see Table 1), $\text{Log}(1+Income)$ is the log of yearly net household income plus one⁶, *Household Size* and *Number of Children* are the number of household members and respondent's children respectively, *DMaritalStatus* is a group of marital

⁵ The distance is variables since the life expectancy target age in the SHARE questionnaire varies with the age of the respondent. More specifically, it is 75 for respondents aged less below 65, 80 for the 65–69 age interval, 85 for the 70–74 interval, 90 for the 75–79 interval, 95 for the 80–84 interval, 100 for the 85–94 interval, 105 for the 95–99 interval, 110 for the 100–104 interval and 120 for those aged above 104. Based on these rules the forecast horizon of the respondent (the difference between the target and current age) is not be less than five and higher than 25 for any ages.

⁶ In order to handle the zero income responses correctly in log form, we take the natural logarithm after adding one to the income variable.

status dummies (Married, Registered Partner, Divorced, Separated and Widowed, with Single being the omitted benchmark), *DJobStatus* is a set of dummy variables capturing respondents' job status. Among health and life style variables *DSportActivity* is a set of dummies measuring frequency of sport practice, *DSelfHealth* is a set of dummies capturing different levels of self-reported health, *DAdla* and *DIadla* are two set of dummies capturing different levels of the two indexes of respondents' abilities, *Underweight* and *Obese* are two dummies capturing conditions based on the conventionally accepted Body Mass Index (BMI) thresholds (BMI<18.49 for the underweight, BMI>34.9 for the obese respondents), *MaxGrip* is another functionality variable measuring respondent's arm strength, *NChronicDiseases* is the number of chronic diseases diagnosed by a doctor. We as well control for the most important diseases for which respondents received a diagnosis (Diabetes, Heath attack, high pressure, stroke, lung disease, Parkinson). Country and wave dummies are included in the estimates, while standard errors are clustered at country level or are robust standard errors according to the different estimated specifications as indicated in table legends.

Regression findings from pooled estimates show that the answer that life has "often" sense is associated to a rise of around 16 points of the self-assessed percentage probability of being alive at the target age compared to the opposite benchmark of life having "never" sense after controlling for all other concurring factors included in the estimates (Table 3, column 1). The impact is stronger than for individuals declaring that life has "sometimes" or "rarely" sense (7.1 and 1.4 points). The inclusion of self-assessed health as control in the estimates reduces only slightly the magnitude of the "often" effect (around 14 percent for the "often" answer, while around 7 and 1.5 percent for the other two answers of "sometimes" and "rarely" respectively).

Among other controls hearth attack and cancer are the two chronic diseases with the strongest negative impact on our dependent variable (4 and 5 points respectively). Even though diagnosed pathologies may not perfectly capture actual respondents' health conditions the inclusion of functionalities and self-assessed health should correct most of the omitted variable bias on

respondent's health conditions. The inclusion of the self-assessed health dummies is therefore important to avoid the risk that the eudaimonic wellbeing answer actually captures unobserved health conditions felt by the respondent but still not recorded with a doctor diagnosis. It is therefore no wonder that respondents declaring self-assessed "poor" health formulate a probability to be alive at the target age 22 points lower than those declaring self-assessed "excellent" health (Table 3, column 2).

Among other controls male respondents formulate *ceteris paribus* 3 points lower percentage probability of being alive at the target age, in the same direction of the gender difference in objective life expectancy data.

The positive time trend in medical progress seems reflected in wave dummy coefficients, with respondents from the last wave reporting 5 points higher self-assessed percentage probability of being alive at the target age with respect to the second wave omitted benchmark.

A typical problem in panel data (and especially in those covering information on aged individuals such as SHARE) is attrition between waves that can be due to non-responses unrelated to respondent's decease. Elimination of this type of observations can produce a bias in the estimates if nonresponse unrelated to death is positively correlated with subjective survival probability and poor sense of life. To correct for this potential source of bias we use the standard approach of estimating a survival equation and using predicted values as inverse weights for our observations when estimating our benchmark model. Our main result is unchanged since eudaimonic wellbeing remains positively and significantly correlated with the dependent variable (Table 3, columns 3 and 4).

We as well re-estimate our specification with fixed effects in order to control for time invariant idiosyncratic effects (Table 3, columns 5 and 6). Consider that the use of fixed effects wipes out the cross-sectional correlation between eudaimonic wellbeing and self-assessed life expectancy that may account for an important part of the relationship between the two variables. What we are measuring in fixed effect estimates is therefore the within effect only, that is, the correlation between changes

over time in eudaimonic wellbeing for a given respondent with changes in the dependent variable. In our fixed effects estimates eudaimonic wellbeing remains significant but the magnitude of the coefficients drops to 4 and 7 percentage probability levels for the “sometimes” and “often” life sense answers respectively.

5. Robustness checks

We perform several robustness checks on our main findings. First, we estimate our base model for each wave and find that the gap in subjective survival probability between individuals declaring highest and lowest life sense generally grows across years (table 4). A likely interpretation is that medical progress raises the life sense effect on the expected survival probability. We further control more in depth for the disturbing effect of self-assessed health by estimating the model separately for each subgroup of respondents declaring the same level of self-assessed health (Tables 5 and 6). We find, as expected, that the impact of eudaimonic wellbeing on the dependent variable gets larger for individuals with lower self-assessed health. More specifically, declaring that one’s own life “often” makes sense produces a 23 point higher subjective probability in percentage of being alive at the target age vis-à-vis individuals declaring that their life “never” makes sense, against an 8 points higher effect between the same two (highest/lowest sense of life) groups when the model is estimated only for respondents declaring that their health is excellent. The gender split of our sample shows that life sense produces a stronger effect on survival probability for females than males (Table 7) and for the low educated than the high educated (Table 8) in both OLS and fixed effect estimates. Coefficients of fixed effect estimates are lower for all the four groups showing that the within effect is smaller than the aggregate effect.

In a further robustness check we test whether our findings are robust when controlling for potential distortions caused by focal responses. As is well known when individuals are asked about probabilities ranging from 0 to 100 percent responses they tend to concentrate around focal numbers (e.g., Hurd and McGarry, 1995; Hurd et al., 1998; Hurd et al., 2005). Focal responses are generally

considered in the literature as signalling lower accuracy (Lillard and Willis, 2001; Kézdi and Willis, 2003; Hill et al., 2004) or higher uncertainty in prediction (e.g., de Bruin et al., 2000; Manski and Molinari, 2010; Delavande and Rohwedder, 2011).

Approaches followed to tackle the point include straightforward elimination of focal responses from the sample or, alternatively, imputation methods that replace focal answers with predicted values. When we look at the histogram of the subjective survival probabilities in our data, we see that the responses are more concentrated on 50, 80 and 100 numbers. Hence, we eliminate all these possible outlier responses and run our regressions again with the remaining responses. Our findings show that life sense maintains a significant, positive and even slightly higher impact on the respondents' estimated likelihood of being alive at the target age even after excluding focal responses (Table 8).

6. Instrumental Variable estimates

Reverse causality may engender biased findings in our estimates since higher respondent's subjective survival probability may also cause to her/him higher eudaimonic wellbeing (life sense). Even though controlling for self-assessed health and objective health indicators should capture most of this potential reverse causality effect, measurement errors and omitted drivers producing spurious correlation between eudaimonic wellbeing and our dependent variable can be other sources of endogeneity in our results.

In order to account for endogeneity, we need a relevant and valid instrument, that is, an instrument correlated with life sense and uncorrelated with life expectancy.

A plausible instrument can be the number of respondent's children that we assume as not being correlated with the respondent's subjective survival probability. Our conjecture is confirmed by previous regressions where, even when considering sample attrition and self-health or fixed effects, the number of respondent's children has no significant effects on life expectancy. We as well check

that, even without all regression controls, the variable is not significant in cross-sectional regressions and when the model is estimated for the subsample of individuals having the same self-assessed health level. Lack of significance of the number of children variable is confirmed when we exclude focal points in the data. In terms of relevance of the instrument we expect the number of children to be correlated with eudaimonic wellbeing.

On the other hand, we must take into account that the life sense variable is a categorical variable such that using only number of children causes an under-identification problem since there are more than one endogenous categories under life sense. Considering the extremely high effect of the life sense “often” response on subjective survival probability with respect to the other responses, we create a distinct dummy variable for this category and use it as our endogenous independent variable to be instrumented using number of children. Our first stage instrumental variable estimates show that the number of children is highly and positively correlated with life sense (Table 9, panel 2). The F-Test confirms our instrument is not weak, with values higher than the critical threshold suggested by Stock and Yogo (2005). In terms of economic significance, by instrumenting life sense often with the number of children, we find that, on average, a respondent reporting that her/his life has “often” sense reports, *ceteris paribus*, a 21-point higher percentage probability of being alive at the target age with respect to the other levels of life sense (a magnitude larger than in the OLS estimates).

7. Are respondent’s predictions correct ?

In order to check whether the estimated implicit effect of sense of life on survival probability is correct we estimate a specification of determinants of mortality in our SHARE sample. We expect a significant and negative effect of life sense on mortality, if the respondents had correctly estimated their survival probabilities. Our guess is correct since we find a 0.09 percent lower probability of dying for respondents who declare that their life has “often” sense with respect to the omitted benchmark of those declaring that their life has “never” sense in our base mortality estimates (Table

10, panel 1). Our findings remain robust when we include self-health variables among regressors. Similar to life sense, being male, underweight, doing less sport or having diabetes, heart attack, high pressure, stroke, lung and cancer diseases significantly affect mortality (see Appendix for detailed Table 10 with all the covariates of mortality).

8. Conclusions

Population ageing is a common trend in most high-income countries and not only. As far as individuals get older different factors potentially affecting life expectancy become more relevant thereby producing highly heterogeneous survival probabilities. The investigation of the relevance of these factors is of paramount importance in health and wellbeing research. Individuals may obviously predict incorrectly their chances of survival, and subjective survival probabilities may diverge from statistically measured average survival probabilities for the given population subgroup to which an individual belongs. Nonetheless, subjective survival probabilities (even when they are incorrect) are more important than average subgroup “objective” probabilities from a subjective wellbeing and economic perspective since the former are what matters when individuals evaluate their life perspectives and take their consumption, savings and retirement decisions.

In our paper we argue that eudaimonic wellbeing is a fundamental and so far neglected driver of subjective survival probabilities. Our econometric findings show that this is the case. With an instrumental variable approach we find that a direct causality nexus between eudaimonic wellbeing and predicted survival exists. We also show that respondents are not wrong since eudaimonic wellbeing actually do affect their mortality.

Our findings have straightforward policy implications since they indicate that active ageing policies based on the reinforcement of life sense of the elders can have very relevant effects on their predicted and actual survival.

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Table 1. Variable Legend

Variable	Description
Dependent variables	
SSP	Self-assessed probability percentage of being alive at the target age.
Life satisfaction	Self-assessed life satisfaction scores which increases with increasing satisfaction.
Mortality	Dummy variable=1 if the respondent dies in next wave and 0 otherwise.
Health related variables	
Number of chronic	Number of the following chronic diseases: heart attack , high blood pressure or hypertension, high blood cholesterol ,a stroke or cerebral vascular disease,diabetes or high blood sugar,chronic lung disease,cancer or malignant tumor, stomach or duodenal ulcer, peptic ulcer, parkinson disease, cataracts, hip fracture or femoral fractur.
Diabetes	Dummy variable=1 if the doctor told the respondent had: Diabetes or high blood sugar. 0 otherwise
Heart attack	Dummy variable=1 if the doctor told the respondent had: heart attack. 0 otherwise
High pressure	Dummy variable=1 if the doctor told the respondent had: high blood pressure or hypertension. 0 otherwise
Stroke	Dummy variable=1 if the doctor told the respondent had: stroke. 0 otherwise
Lung	Dummy variable=1 if the doctor told the respondent had: chronic lung disease. 0 otherwise
Cancer	Dummy variable=1 if the doctor told the respondent had: cancer. 0 otherwise
Parkinson	Dummy variable=1 if the doctor told the respondent had: Parkinson. 0 otherwise
Self Health	Self-perceived health status: 1=Excellent, 2=Very good, 3=Good,4=Fair, 5=Poor
Maxgrip	Maximum of grip strength measure which increases with increasing grip strength.
Underweight	Dummy variable=1 if the respondent is underweight BMI<18.49), 0 otherwise
Obese	Dummy variable=1 if the respondent is obese (BMI>34.9) , 0 otherwise
Adla	Activities of Daily Living Index ranges from 0 to 5 with increasing difficulties of the respondent. It covers five main tasks: dressing, bathing or showering, eating, cutting up food, walking across a room and getting in or out of bed.
Iadla	Instrumental Activities of Daily Living Indices range from 0 to 3 with increasing difficulties of the respondent. It covers the following activities: telephone calls, taking medications and managing money
Socio-demographic and other variables	
Age class	0/1dummies for the following age groups: Age 50-54; Age 55-59; Age 60-64; Age 65-69; Age 70-74; Age 75-79, Age 80-84; Age 85-89; Age 90-94; Age 95+
Education status	ISCED (International Standard Classification of Education) levels: Zero level of education meaning no education or unfinished first level of education. First level (primary education or first stage basic education), second level (lower secondary or second stage of basic education), third level (upper secondary education), fourth level (post-secondary non tertiary education), fifth level (first stage of tertiary education), sixth level (second stage of tertiary education).
Male	Dummy variable = 1 if the respondent's gender is male and 0 otherwise.
Income	Annual household income after taxes and social insurance contributions.
Job status	Categorical job situation variable indicating Retired, Employed or self-employed,Unemployed,Permanently sick or disabled, Homemaker or Other
Sport activity	Frequency of sport activities done by the respondent. Defined in a decreasing manner: 1. More than once a week, 2. Once a week, 3. One to 3 times a month 4. Hardly ever or never
Marital status	Marital satatus categorical variable: 1=Married, 2= Registered Partner; 3= Divorced 4= Separated; 5= Widowed
Number of children	Number of children
1 child	Dummy variable=1 if the respondent has 1 child. 0 otherwise
2 children	Dummy variable=1 if the respondent has 2 children. 0 otherwise
3 children	Dummy variable=1 if the respondent has 3 children. 0 otherwise
4+ children	Dummy variable=1 if the respondent has 4 or more children. 0 otherwise

Friend network size	Number of friends in social network.
Life sense	The frequency with which (arranged in an increasing manner: 0=never, 1=rarely, 2=sometimes and 3=often) the respondent gives a meaning to life.
Life sense often	Dummy variable=1 if the respondent often gives a meaning to life. 0 otherwise
Social network size	Number of people in social network.
Social connection level	Scale of social connectedness which increases with higher connection.
Social connection satisfaction	Scale of social network satisfaction which increases with higher satisfaction.
Wave	The rounds of interviews: Wave 2 in 2006, Wave 4 in 2010, Wave 5 in 2013 and Wave 6 in 2015.
Country	The countries that the surveys were realized: Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Israel, Czech Republic, Poland, Ireland, Hungary, Portugal, Slovenia and Estonia.

Tab 2 Descriptive statistics of the sample

Continuous variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Subjective survival probability	184,248	62.418	29.789	0	100
Household size	220,601	2.174	1.015	0	14
ln(1+Income)	220,183	9.069	1.475	0	15.439
Number of children	219,377	2.175	1.373	0	19
Maxgrip	205,381	33.716	11.846	1	99
Number of chronic	219,964	1.170	1.234	0	10
Forecast horizon	195,142	14.489	3.904	5	25

Categorical DummyVariables

Variable	Obs	Density	Variable	Obs	Density
Life satisfaction	219,677		Life sense	220,601	
0		0.006	Never		0.025
1		0.003	Rarely		0.068
2		0.006	Sometimes		0.234
3		0.014	Often		0.674
4		0.018			
5		0.100	Mortality	109,090	0.035
6		0.075	Self health	220,095	
7		0.166	Excellent		0.078
8		0.309	Very good		0.179
9		0.153	Good		0.363
10		0.150	Fair		0.276
			Poor		0.104
Male	220,601	0.436			
Age class	215,738		Education status	220,601	
50-55		0.095	No or unfinished		0.056
55-59		0.165	Primary		0.188
60-64		0.183	Lower Secondary		0.177
65-69		0.172	Upper Secondary		0.323
70-74		0.142	Post-Secondary, non Tertiary		0.044
75-79		0.112	First level Tertiary		0.204
80-84		0.077	Second level Tertiary		0.008
85-89		0.039	Obese	213,876	0.213
90-94		0.013	Underweight	220,601	0.012
95+		0.001	Diabetes	220,383	0.125
Marital status	217,885		Heart attack	220,383	0.120

Married	0.689	High pressure	220,383	0.391
Registered Partner	0.015	Stroke	220,383	0.037
Separated	0.012	Lung	220,383	0.061
Never Married	0.054	Cancer	220,383	0.049
Divorced	0.084	Parkinson	220,383	0.007
Widowed	0.146			
Adla	259.269			
0	0.895			
1	0.057			
2	0.023	Iadla	220,115	
3	0.012		0	0.955
4	0.007		1	0.030
5	0.005		2	0.009
Country	220,601		3	0.006
Austria	0.062			
Germany	0.064	Job status	218,488	
Sweden	0.058		Retired	0.557
			Employed or self-employed	0.274
Netherlands	0.043		Unemployed	0.030
Spain	0.077		Permanently sick or disabled	0.034
Italy	0.073		Homemaker	0.092
France	0.075		Other	0.013
Denmark	0.057			
Greece	0.036			
Switzerland	0.050	Sport Activity	219,980	
Belgium	0.088		More than once a week	0.343
Israel	0.028		Once a week	0.140
Czech Republic	0.083		One to 3 times a month	0.092
Poland	0.026		Hardly ever or never	0.426
Ireland	0.005			
Luxembourg	0.014	Wave	219,980	
Hungary	0.014			
Portugal	0.016		2	0.161
Slovenia	0.044		4	0.255
Estonia	0.078		5	0.290
Croatia	0.011		6	0.294

Note: Density reports the average value of the (0/1) dummy variable picking up the given modality of the categorical variable.

Table 3 Pooled OLS, Fixed Effect and Survival Probability estimates

VARIABLES	(1) Base	(2) Base+SH	(3) Base+Attr	(4) Base+Attr+SH	(5) FE	(6) FE+SH	(7) Sample Survival
Life sense							
Rarely	1.435* (0.780)	1.621** (0.729)	1.232 (0.830)	1.495* (0.786)	1.168 (0.754)	1.175 (0.776)	0.014 (0.009)

	Sometimes	7.135*** (0.631)	6.576*** (0.556)	6.866*** (0.718)	6.380*** (0.655)	3.925*** (0.789)	3.668*** (0.795)	0.005 (0.012)
	Often	15.543*** (0.714)	13.782*** (0.653)	15.447*** (0.807)	13.771*** (0.740)	7.802*** (0.928)	7.330*** (0.914)	0.021* (0.012)
Male		-4.043*** (0.552)	-3.080*** (0.496)	-3.992*** (0.534)	-3.074*** (0.500)	10.018 (13.801)	10.166 (13.283)	-0.009** (0.004)
Education status								
	Primary	-0.831 (0.822)	-0.967 (0.898)	-1.142 (0.902)	-1.298 (0.940)	15.923*** (3.307)	16.515*** (3.296)	0.024*** (0.008)
	Lower Secondary	-0.879 (0.674)	-1.348* (0.726)	-0.950 (0.686)	-1.485* (0.717)	13.053 (8.077)	13.878* (7.991)	0.019** (0.009)
	Upper Secondary	-0.058 (0.580)	-0.969 (0.630)	-0.205 (0.664)	-1.150 (0.683)	6.866 (6.016)	6.849 (6.004)	0.035*** (0.009)
	Post-Secondary, non Tertiary	0.234 (0.589)	-0.916 (0.640)	-0.179 (0.715)	-1.306* (0.722)	9.060 (9.719)	8.241 (9.670)	0.037*** (0.013)
	First level Tertiary	0.554 (0.656)	-1.073 (0.750)	0.164 (0.743)	-1.414* (0.793)	10.470 (8.325)	10.308 (8.396)	0.052*** (0.009)
	Second level Tertiary	-0.381 (1.294)	-2.475* (1.433)	-0.452 (1.320)	-2.522* (1.431)	23.120** (9.039)	23.216** (8.977)	0.036* (0.018)
Age class								
	55-59	-3.965*** (0.329)	-3.821*** (0.335)	-4.363*** (0.341)	-4.246*** (0.346)	-0.949** (0.418)	-0.992** (0.411)	-0.038*** (0.008)
	60-64	-7.661*** (0.456)	-7.732*** (0.505)	-8.143*** (0.448)	-8.235*** (0.485)	-1.517* (0.779)	-1.653** (0.745)	-0.043*** (0.009)
	65-69	-12.016*** (0.636)	-12.156*** (0.679)	-12.684*** (0.683)	-12.846*** (0.713)	-1.459 (1.012)	-1.627 (0.977)	-0.046*** (0.012)
	70-74	-16.693*** (0.760)	-16.756*** (0.806)	-17.190*** (0.721)	-17.259*** (0.751)	-0.033 (1.323)	-0.169 (1.274)	-0.056*** (0.011)
	75-79	-23.893*** (0.958)	-23.805*** (1.045)	-24.560*** (0.964)	-24.478*** (1.024)	-1.500 (1.552)	-1.545 (1.489)	-0.055*** (0.013)
	80-84	-30.192*** (1.305)	-30.089*** (1.427)	-30.818*** (1.188)	-30.696*** (1.297)	-2.728 (1.916)	-2.648 (1.832)	-0.080*** (0.013)
	85-89	-34.129*** (1.510)	-34.208*** (1.626)	-34.866*** (1.415)	-35.078*** (1.549)	-2.141 (2.144)	-1.863 (2.020)	-0.096*** (0.014)
	90-94	-34.857*** (2.101)	-35.563*** (2.180)	-35.084*** (1.878)	-35.840*** (1.956)	1.358 (3.410)	1.837 (3.374)	-0.116*** (0.015)
	95+	-46.151*** (4.353)	-47.285*** (4.020)	-47.194*** (4.095)	-48.910*** (3.838)	-14.979* (7.607)	-13.671* (7.745)	-0.186*** (0.027)
Forecast horizon		-1.243*** (0.066)	-1.240*** (0.064)	-1.298*** (0.070)	-1.290*** (0.068)	-1.638*** (0.088)	-1.636*** (0.086)	
Household size		0.108 (0.106)	0.118 (0.098)	0.170 (0.124)	0.180 (0.124)	0.323 (0.234)	0.322 (0.227)	0.004** (0.002)
ln(1+Income)		0.333*** (0.114)	0.270** (0.112)	0.338*** (0.108)	0.279** (0.105)	-0.019 (0.112)	-0.027 (0.110)	0.006** (0.002)
Number of children		0.143 (0.113)	0.149 (0.119)	0.138 (0.112)	0.126 (0.121)	0.036 (0.192)	0.071 (0.197)	0.002 (0.002)
Sport activity								
	More than once a week	-1.352*** (0.316)	-0.976*** (0.315)	-1.577*** (0.331)	-1.198*** (0.331)	-0.467 (0.317)	-0.366 (0.307)	0.001 (0.003)
	One to 3 times a month	-1.879***	-1.526***	-2.021***	-1.663***	-0.537	-0.440	-0.007

	(0.392)	(0.400)	(0.395)	(0.402)	(0.630)	(0.621)	(0.006)
Hardly ever or never	-3.279***	-1.775***	-3.295***	-1.793***	-1.467**	-1.084*	-0.009**
	(0.465)	(0.453)	(0.446)	(0.432)	(0.590)	(0.581)	(0.004)
Self health							
Very good		-4.237***		-4.193***		-1.407***	-0.004
		(0.177)		(0.247)		(0.281)	(0.004)
Good		-8.285***		-8.194***		-3.462***	-0.009*
		(0.393)		(0.449)		(0.387)	(0.006)
Fair		-13.813***		-13.623***		-6.383***	-0.011
		(0.501)		(0.537)		(0.364)	(0.011)
Poor		-22.039***		-21.729***		-10.562***	-0.014
		(0.624)		(0.643)		(0.484)	(0.014)
Marital status							
Registered Partner	0.355	0.376	0.519	0.480	1.235	0.996	-0.015
	(0.721)	(0.702)	(0.561)	(0.545)	(0.903)	(0.841)	(0.013)
Separated	-0.816	-0.742	-1.214*	-1.205*	0.494	0.126	-0.002
	(0.506)	(0.522)	(0.609)	(0.654)	(2.006)	(1.943)	(0.008)
Never Married	-0.234	-0.119	-0.193	-0.115	3.010	3.070	-0.004
	(0.485)	(0.460)	(0.456)	(0.438)	(2.832)	(2.806)	(0.006)
Divorced	1.082**	1.177**	1.317**	1.413**	1.187	1.092	0.007
	(0.518)	(0.500)	(0.546)	(0.541)	(1.113)	(1.132)	(0.006)
Widowed	-1.368**	-1.458***	-1.240**	-1.367**	-1.004	-1.183	-0.009*
	(0.514)	(0.492)	(0.494)	(0.475)	(0.776)	(0.795)	(0.005)
Adla (1)	-4.840***	-2.438***	-4.824***	-2.429***	-2.292***	-1.777***	0.013***
	(0.381)	(0.428)	(0.401)	(0.443)	(0.460)	(0.466)	(0.005)
Adla (2)	-4.432***	-1.045	-4.799***	-1.424*	-2.912**	-2.083*	0.006
	(0.821)	(0.772)	(0.816)	(0.762)	(1.094)	(1.043)	(0.007)
Adla (3)	-7.075***	-3.155***	-7.135***	-3.268***	-3.899***	-2.853**	-0.007
	(0.788)	(0.717)	(0.745)	(0.685)	(1.242)	(1.218)	(0.013)
Adla (4)	-8.825***	-4.592***	-8.074***	-3.912***	-5.455***	-4.212**	-0.019
	(1.358)	(1.321)	(1.316)	(1.272)	(1.545)	(1.543)	(0.013)
Adla (5)	-6.137***	-3.147	-6.564**	-3.629	-6.536***	-5.719***	0.028
	(2.137)	(2.127)	(2.338)	(2.278)	(2.088)	(1.941)	(0.025)
Iadla (1)	-2.938***	-1.875**	-2.420**	-1.361	-1.438	-1.189	-0.011**
	(0.694)	(0.686)	(0.883)	(0.911)	(0.917)	(0.928)	(0.006)
Iadla (2)	-1.476	-1.166	-0.138	0.115	-0.972	-0.955	-0.011
	(1.161)	(1.126)	(1.522)	(1.495)	(1.188)	(1.100)	(0.018)
Iadla (3)	3.346*	2.667	4.622**	3.938**	1.440	1.258	-0.031*
	(1.868)	(1.928)	(1.864)	(1.841)	(2.249)	(2.211)	(0.017)
Underweight	-3.670***	-2.942***	-3.956***	-3.240***	0.529	0.777	-0.015**
	(0.821)	(0.750)	(0.883)	(0.807)	(0.900)	(0.890)	(0.007)
Obese	-0.229	0.533*	-0.232	0.546*	0.283	0.408	0.008***
	(0.311)	(0.269)	(0.335)	(0.296)	(0.342)	(0.349)	(0.003)
Maxgrip	0.156***	0.090***	0.155***	0.090***	0.065**	0.041	0.001***
	(0.012)	(0.013)	(0.014)	(0.015)	(0.026)	(0.025)	(0.000)
Number of chronic	-1.439***	-0.737***	-1.399***	-0.720***	-0.428*	-0.276	0.013***
	(0.146)	(0.133)	(0.133)	(0.125)	(0.227)	(0.210)	(0.001)
Diabetes	-0.670*	0.034	-0.623	0.115	-0.552	-0.323	-0.012***
	(0.333)	(0.281)	(0.376)	(0.338)	(0.607)	(0.617)	(0.002)
Heart attack	-4.097***	-2.751***	-4.136***	-2.799***	-1.756***	-1.369**	-0.000
	(0.409)	(0.380)	(0.389)	(0.375)	(0.493)	(0.484)	(0.003)

High pressure	-0.908*** (0.289)	-0.676** (0.262)	-0.988** (0.352)	-0.727** (0.321)	-0.080 (0.275)	0.020 (0.278)	-0.011*** (0.003)
Stroke	-0.259 (0.650)	0.505 (0.598)	-0.814 (0.868)	-0.069 (0.854)	-0.518 (0.708)	-0.172 (0.679)	0.001 (0.005)
Lung	-3.329*** (0.498)	-1.774*** (0.409)	-3.354*** (0.486)	-1.808*** (0.401)	-0.902 (0.719)	-0.674 (0.720)	-0.000 (0.006)
Cancer	-5.168*** (0.640)	-3.608*** (0.585)	-5.125*** (0.582)	-3.595*** (0.534)	-2.979*** (0.634)	-2.340*** (0.630)	0.008* (0.005)
Parkinson	-1.546 (1.050)	0.521 (0.869)	-1.812 (1.174)	0.313 (0.993)	2.150 (2.142)	2.616 (2.096)	-0.024*** (0.009)
Job status							
Employed or self-employed	1.909*** (0.523)	1.265** (0.487)	2.029*** (0.489)	1.417*** (0.474)	-1.135*** (0.329)	-1.115*** (0.337)	-0.000 (0.005)
Unemployed	-0.056 (0.658)	0.267 (0.669)	0.258 (0.594)	0.650 (0.591)	-0.690 (0.674)	-0.445 (0.675)	0.003 (0.008)
Permanently sick or disabled	-3.622*** (0.631)	-0.523 (0.651)	-3.135*** (0.736)	0.025 (0.789)	-2.031** (0.806)	-1.488* (0.800)	-0.003 (0.007)
Homemaker	-2.044*** (0.409)	-2.072*** (0.393)	-2.081*** (0.380)	-2.107*** (0.376)	-0.485 (0.551)	-0.460 (0.580)	-0.007 (0.007)
Other	0.432 (0.885)	0.568 (0.819)	0.028 (0.825)	0.033 (0.770)	-1.605 (0.967)	-1.503 (0.976)	-0.003 (0.008)
Wave							
4	0.391 (0.925)	0.066 (0.948)	0.470 (0.796)	0.161 (0.824)	-6.179*** (0.918)	-6.078*** (0.890)	-0.294*** (0.068)
5	3.220*** (0.719)	2.981*** (0.731)	3.125*** (0.661)	2.864*** (0.677)	-5.949*** (0.678)	-5.742*** (0.641)	-0.043 (0.059)
6	5.511*** (0.792)	5.313*** (0.809)	5.546*** (0.746)	5.322*** (0.765)	-6.064*** (0.938)	-5.761*** (0.889)	0.175*** (0.035)
Country Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Constant	80.382*** (1.598)	91.760*** (2.012)	81.801*** (1.810)	92.941*** (2.035)	71.610*** (8.349)	76.021*** (7.949)	
Observations	162,667	162,636	159,293	159,293	162,667	162,636	189,296
R-squared	0.246	0.268	0.250	0.271	0.041	0.047	
Number of id					94,637	94,624	

The omitted benchmark is an individual married, retired, living in Austria in the second wave, aged between 50-54, with no education level, making sport more than once a week, with excellent self-declared health, reporting zero difficulty in the Adla and ladla indexes, declaring that her/his life never makes sense. Clustered (for country) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4 Pooled OLS for Cross-section single waves

VARIABLES	Wave 2	Wave 4	Wave 5	Wave 6
Life sense				
Rarely	-2.054 (1.830)	1.061 (1.352)	0.091 (1.074)	4.817*** (1.295)
Sometimes	2.820 (1.781)	6.310*** (0.857)	6.061*** (1.312)	10.848*** (1.060)
Often	10.972*** (1.866)	17.128*** (1.000)	14.280*** (1.221)	18.298*** (0.925)

Observations	27,540	28,912	51,354	54,861
R-squared	0.248	0.250	0.231	0.256

The omitted benchmark is an individual declaring that her/his life never makes sense.

Clustered (for country) standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 5 Pooled OLS for each self-assessed health levels

VARIABLES	(1) SH1	(2) SH2	(3) SH3	(4) SH4	(5) SH5	(6) SH1+Attr	(7) SH2+Attr	(8) SH3+Attr	(9) SH4+Attr	(10) SH5+Attr
Life sense										
Rarely	-2.373 (4.000)	-3.084 (2.203)	-1.463 (1.413)	1.376 (1.386)	6.784*** (1.274)	0.363 (5.574)	-2.787 (2.022)	-1.294 (1.389)	0.864 (1.279)	6.708*** (1.599)
Sometimes	1.296 (1.986)	-0.644 (1.919)	2.163* (1.181)	6.684*** (0.955)	13.845*** (1.538)	2.940 (3.594)	-0.480 (2.028)	2.526** (1.057)	6.114*** (1.083)	13.810*** (1.753)
Often	8.038*** (2.207)	4.952*** (1.667)	9.117*** (1.087)	14.800*** (1.085)	22.911*** (1.459)	9.576*** (3.319)	5.588*** (1.620)	9.638*** (1.003)	14.484*** (1.100)	22.558*** (1.613)
Observations	13,546	30,547	60,267	43,995	14,281	13,283	30,053	59,354	42,928	13,675
R-squared	0.135	0.145	0.168	0.177	0.178	0.136	0.152	0.177	0.185	0.173

Self-reported never life sense is the omitted benchmark. Clustered (for country) standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6 Pooled OLS and Fixed Effect estimations for females and males

VARIABLES	(1) OLS Female	(2) OLS Male	(3) FE Female	(4) FE Male
Life sense				
Rarely	2.176** (0.897)	1.012 (0.755)	1.635 (1.005)	0.678 (0.983)
Sometimes	7.111*** (0.748)	5.884*** (0.580)	4.447*** (0.930)	2.802** (1.090)
Often	14.457*** (0.930)	12.825*** (0.535)	8.188*** (1.042)	6.391*** (1.202)
Observations	88,563	74,073	88,563	74,073
R-squared	0.287	0.250	0.047	0.050
Number of id			51,358	43,272

Self-reported never life sense is the omitted benchmark. Clustered (for country) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7 Pooled OLS and Fixed Effect estimations for high and low education levels

VARIABLES	(1) OLS High Educ	(2) OLS Low Educ	(3) FE High Educ	(4) FE Low Educ
Life sense				
Rarely	0.857 (0.629)	2.934* (1.465)	0.330 (0.442)	3.052 (1.973)
Sometimes	5.697*** (0.666)	8.316*** (1.181)	2.931*** (0.830)	5.191*** (1.720)
Often	13.111*** (0.759)	15.085*** (1.280)	6.857*** (1.023)	8.090*** (1.610)

Observations	128,496	34,140	128,496	34,140
R-squared	0.269	0.241	0.049	0.049
Number of id			73,447	21,216

Self-reported never life sense is the omitted benchmark. Clustered (for country) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Figure 1 Histogram of Subjective survival probability

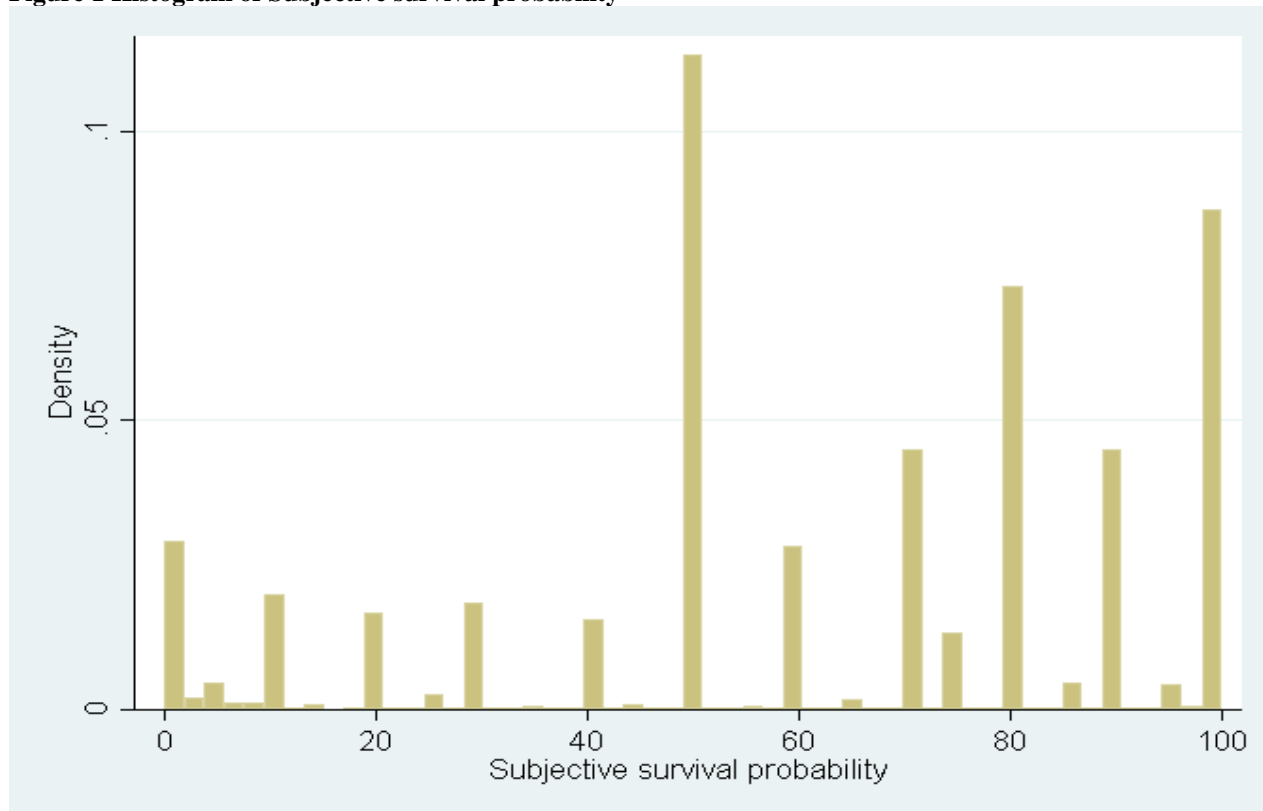


Table 8 Robustness check excluding focal points

VARIABLES	(1) Base	(2) Base+SH	(3) Base+Attr	(4) Base+Attr+SH	(5) FE	(6) FE+SH
Life sense						
Rarely	4.353*** (0.923)	3.917*** (0.930)	4.219*** (0.896)	3.795*** (0.892)	2.239** (1.021)	2.186** (0.978)
Sometimes	10.465*** (0.803)	10.022*** (0.985)	9.471*** (0.741)	9.052*** (0.914)	5.317*** (1.300)	5.140*** (1.254)
Often	18.438*** (0.631)	18.264*** (0.768)	16.033*** (0.557)	15.890*** (0.687)	8.242*** (1.253)	7.869*** (1.157)
Observations	79,449	77,812	79,428	77,812	79,449	79,428
R-squared	0.315	0.317	0.340	0.341	0.048	0.056
					59,529	59,512

Self-reported never life sense is the omitted benchmark. Clustered (for country) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 9 OLS and Instrumental Variable Regressions for the effect of Life sense often on SSP

VARIABLES	(1) OLS SSP	(2) First Stage Life sense often	(3) Second Stage SSP
Life sense often	8.521*** (0.440)		20.95** (9.409)
Number of children	0.164 (0.120)	0.0132*** (0.00155)	
Male	-3.131*** (0.502)	-0.0603*** (0.00804)	-2.382*** (0.681)
Education status			
Primary	-0.928 (0.909)	0.0436** (0.0159)	-1.469* (0.835)
Lower Secondary	-1.294* (0.723)	0.0690*** (0.0148)	-2.151*** (0.723)
Upper Secondary	-0.900 (0.627)	0.108*** (0.0143)	-2.238** (0.944)
Post-Secondary, non Tertiary	-0.831 (0.644)	0.127*** (0.0153)	-2.407** (1.097)
First level Tertiary	-1.008 (0.747)	0.133*** (0.0156)	-2.659** (1.193)
Second level Tertiary	-2.396 (1.403)	0.132*** (0.0211)	-4.038** (1.829)
Age class			
55-59	-3.800*** (0.341)	0.0122** (0.00585)	-3.952*** (0.390)
60-64	-7.713*** (0.517)	0.0148 (0.0112)	-7.896*** (0.570)
65-69	-12.12*** (0.697)	0.0206 (0.0147)	-12.38*** (0.771)
70-74	-16.72*** (0.828)	0.0159 (0.0159)	-16.91*** (0.884)
75-79	-23.77*** (1.075)	0.000916 (0.0156)	-23.78*** (1.159)
80-84	-30.06*** (1.461)	-0.0103 (0.0175)	-29.93*** (1.561)
85-89	-34.20*** (1.650)	-0.0336 (0.0201)	-33.79*** (1.775)
90-94	-35.61*** (2.202)	-0.0430* (0.0247)	-35.07*** (2.277)
95+	-47.43*** (4.115)	-0.0287 (0.0546)	-47.08*** (4.000)
Forecast horizon	-1.239*** (0.0650)	-0.00145 (0.000856)	-1.221*** (0.0668)
Household size	0.138 (0.0965)	0.00678*** (0.00190)	0.0536 (0.103)
ln(1+Income)	0.282** (0.113)	0.0138*** (0.00153)	0.111 (0.159)
Sport activity			
More than once a week	-0.939*** (0.312)	-0.0260*** (0.00775)	-0.617** (0.263)
One to 3 times a month	-1.513***	-0.0502***	-0.890*

		(0.400)	(0.00934)	(0.456)
Hardly ever or never		-1.803***	-0.0468***	-1.222***
		(0.459)	(0.00679)	(0.464)
Marital status				
Registered Partner		0.381	-0.0149	0.566
		(0.703)	(0.0102)	(0.684)
Separated		-0.779	-0.0587***	-0.0498
		(0.527)	(0.0108)	(0.717)
Never Married		-0.165	-0.0787***	0.813
		(0.454)	(0.00582)	(1.083)
Divorced		1.094**	-0.0676***	1.934**
		(0.494)	(0.00762)	(0.808)
Widowed		-1.560***	-0.0684***	-0.710
		(0.497)	(0.00463)	(0.793)
Adla (1)		-2.528***	-0.0315***	-2.137***
		(0.447)	(0.00728)	(0.404)
Adla (2)		-1.206	-0.0411***	-0.696
		(0.775)	(0.00882)	(0.811)
Adla (3)		-3.463***	-0.0442***	-2.914***
		(0.733)	(0.0137)	(0.787)
Adla (4)		-5.119***	-0.0944***	-3.946**
		(1.344)	(0.0141)	(1.583)
Adla (5)		-3.463	-0.0330	-3.053
		(2.154)	(0.0335)	(2.168)
Iadla (1)		-2.142***	-0.0881***	-1.047
		(0.706)	(0.0127)	(1.057)
Iadla (2)		-1.621	-0.119***	-0.141
		(1.133)	(0.0147)	(1.332)
Iadla (3)		2.193	-0.0842***	3.240
		(1.952)	(0.0232)	(2.002)
Self health				
	Very good	-4.186***	-0.0346***	-3.756***
		(0.178)	(0.00654)	(0.396)
	Good	-8.193***	-0.0798***	-7.202***
		(0.398)	(0.00794)	(0.937)
	Fair	-13.76***	-0.158***	-11.81***
		(0.500)	(0.0101)	(1.759)
	Poor	-22.35***	-0.291***	-18.74***
		(0.594)	(0.0132)	(3.016)
Underweight		-2.959***	-0.0318**	-2.564***
		(0.747)	(0.0113)	(0.762)
Obese		0.534*	0.00521	0.470**
		(0.267)	(0.00515)	(0.239)
Maxgrip		0.0915***	0.00213***	0.0649***
		(0.0128)	(0.000320)	(0.0229)
Number of chronic		-0.757***	-0.00702**	-0.669***
		(0.132)	(0.00280)	(0.140)
Diabetes		0.0399	0.00513	-0.0239
		(0.288)	(0.00430)	(0.304)
Heart attack		-2.729***	0.00624	-2.807***
		(0.390)	(0.00569)	(0.407)
High pressure		-0.643**	0.0154***	-0.834***

	(0.261)	(0.00360)	(0.277)
Stroke	0.460	-0.0104*	0.590
	(0.605)	(0.00563)	(0.623)
Lung	-1.815***	0.00337	-1.857***
	(0.408)	(0.00591)	(0.387)
Cancer	-3.590***	0.0277***	-3.934***
	(0.580)	(0.00822)	(0.671)
Parkinson	0.525	-0.0182	0.751
	(0.860)	(0.0152)	(0.993)
Job status			
Employed or self-employed	1.278**	0.0102*	1.151***
	(0.491)	(0.00558)	(0.436)
Unemployed	0.193	-0.0640***	0.988
	(0.681)	(0.0108)	(0.950)
Permanently sick or disabled	-0.576	-0.0379***	-0.105
	(0.661)	(0.0106)	(0.846)
Homemaker	-2.111***	-0.0302***	-1.736***
	(0.399)	(0.00953)	(0.452)
Other	0.530	-0.00918	0.644
	(0.810)	(0.00811)	(0.782)
Country Fixed Effects	YES	YES	YES
Wave Fixed Effects	YES	YES	YES
Constant	69.28***	0.594***	61.40***
	(1.576)	(0.0291)	(6.668)
F Statistics		75.80 P-Value=0.000	
Observations	162,929	162,929	162,929
R-squared	0.262	0.134	0.225

Clustered (for country) standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 10 Mortality Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Base	Base+SH	Base+Attr	Base+Attr+SH	FE	FE+SH	Sample Survival
Life sense							
Rarely	-0.002	-0.002	-0.001	-0.001	0.001	0.000	0.003
	(0.003)	(0.003)	(0.004)	(0.003)	(0.008)	(0.008)	(0.009)
Sometimes	-0.005*	-0.004	-0.005	-0.004	-0.002	-0.002	0.008
	(0.003)	(0.003)	(0.003)	(0.003)	(0.007)	(0.007)	(0.008)
Often	-0.009***	-0.006**	-0.009***	-0.006*	-0.005	-0.004	0.017**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.007)	(0.007)	(0.008)
Observations	95,908	95,886	95,886	95,886	95,908	95,886	127,044
R-squared					0.065	0.067	
					58,996	58,984	

Life has “never” sense is the omitted benchmark. The first four panels represent the marginal probability values evaluated after logit regressions. The other two represents the results after fixed effect regressions (FE) without and with Self Health (SH) variables. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

