Differentiating Retirement Age to Compensate for Health Differences

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Abstract

Population ageing in Europe calls for an overall rise in the age of retirement. However, most observers agree that the latter should be differentiated to account for individuals' heterogeneous health when they grow older. This paper explores the relevance of this idea using European SHARE panel data. It first quantifies the health gradient across European countries, and within each of them across sociodemographic groups (i.e. gender$X$education) at typical retirement age. It then estimates the degree of retirement age differentiation that would be needed to equalise expected health at the moment of retirement. Results point at the need for a very high degree of differentiation to equalise expected health, across and within European countries. But the paper also shows that systematic retirement age differentiation would fail to match a significant portion of the full distribution of health status. In a world synonymous with systematic health-based retirement age differentiation, there would still be a lot of what health economists call F-mistakes ([F]ailure of treatment i.e. no retirement for people in poor health) and E-mistakes ([E]xcessive treatment ie. people in good health going for retirement).

Keywords: Ageing, Health, Retirement Policy, Ex Ante vs Ex Post Egalitarianism

JEL Codes: J14, I1, J26

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1 Introduction

The increase in life expectancy is arguably the most remarkable by-product of economic growth and medical progress. Since the end of the 19^{th} century, advanced economies have been gaining roughly 2.4 years of longevity every decade (Oeppen and Vaupel, 2002). But this trend — in combination with lower fertility — translates into population ageing. And this has far-reaching economic and socio-political consequences. *Ceteris paribus* population ageing will cause declining labour forces and rising old-age dependency. This may hurt economic growth and the overall quality of life if governments need to divert public spending from, say, education or infrastructure investment to fund elderly-related obligations.

Different things could adjust to combat the contraction of the working age population and the rise of old-age dependency and have been explored theoretically and empirically (Acemoglu and Restrepo, 2018; Acemoglu, 2010; Vandenberghe, 2011; Vandenberghe, 2017). They comprise a higher female participation to the labour force (at least in the countries where it remains very low), slightly longer hours of works, less unemployment or even shorter initial education (Vandenberghe, 2020a). But so far, the most common form of adjustment retained by policy markers consists of raising the age of effective retirement. Researchers at the OECD (Martins et al., 2005) have shown numerically that indexing retirement age on (rising) life expectancy could stabilise old-age dependency ratios around their current levels, preventing dramatic tax increases to finance pay-as-you-go pensions, or a general reduction of the level of pensions. And indeed stricter retirement policies implemented since the mid-1990s have proved effective at increasing employment rates (Atalay and Barrett, 2015), although from an historically low level (Costa, 1998).

However, one concern often raised is whether such policies are fair, as elderly workers may differ a lot in terms of their health status[1] and remaining life expectancy.[2] This paper intends to analyse that question by focusing on the health gradient across different countries and, within these countries, across different sociodemographic groups around the age at which retirement typically takes place. It is also to examine the relevance of an automatically differentiated retirement age policy[3] that would aim at equalising expected health at the

[1] A related but quite different question is how many individuals still have the capacity to work beyond a certain age. For a illustration of how SHARE data can be used to quantify that capacity at different ages and in different countries refer to Vandenberghe (2020b).

[2] There is strong evidence that ill-health at 50 is correlated with a shorter life span/early death. De Nardi et al. (2016) show that lifespan is 3.3 years shorter for those with bad health than for those with good health, while Pijoan-Mas and Ríos-Rull (2014) show the equivalent numbers are 5.6 for men and 4.7 for women at age 50.

[3] By "automatically" we mean that the right to retire at a certain age would be granted just on the

moment of retirement. If ageing is a key determinant of ill-health, and if groups' health differ significantly, health-informed retirement age differentiation could represent a relatively straightforward way of making retirement policy more equitable.

The question we ask more specifically is this paper is: what would it take in terms of lowering(raising) the retirement age to ensure that all sociodemographic groups can *expect* to retire in similar (ill)-health? The normative foundations for such an objective is known in social choice theory as ex ante egalitarianism (Diamond, 1967; Fleurbaey et al., 2016). What is more, some of our results presented at the end of the paper – that have to do with people's *realised* health at the moment of their retirement – illustrate the important difference that may exist between ex post and ex ante egalitarianism (Fleurbaey et al., 2016;Ponthiere, 2020).

Another important point is that the whole retirement age differentiation exercise presented here assumes any impacts of work/retirement on health is limited. Lowering or raising the retirement age (and thus varying the duration of the career) is supposed to have no significant impact on health, which means that the latter is primarily driven by age (our variable of differentiation/equalisation) and other factors (genetic background, childhood health and circumstances...).[4] This may seem to be a strong assumption, but it is backed by a relatively abundant economic literature. Bassanini and Caroli (2015) review the many papers that have studied the impact of work on health and find mixed evidence. Some authors point at work, in particular long hours or night shifts, accelerating health decline; while others suggest exactly the opposite. There is also an abundant literature asking whether retirement is good or bad for health. And again the results are not clear cut. Many works conclude to a significant negative effect of retirement on cognitive functioning and mental health (Mazzonna and Peracchi, 2012; Bonsang et al., 2012) while others conclude that postponing retirement is detrimental to self-reported health (Rose, 2020). And even for disability insurance (DI) the results are contrasted: Börsch-Supan, Bucher-Koenen, et al. (2017) find a positive impact on mental health but not on objective health.

The first result of this paper is that the degree of retirement age differentiation required to equalise expected health – i.e. achieve ex ante equality – is important, ranging from 52 in Poland (POL) to 79 in Switzerland (CHE). It is also very important across socioecononomic groups within countries. On average, across the EU, women should be allowed to retire 2.9

condition of belonging to a certain category. There would be no need to undergo screening and be subjected to individualised checks, as it is the case to get disability benefits.

[4] And also, when considering differences across countries, macro economic variables like GDP/head or capital intensity.

years earlier than men.[5] And very often tertiary-educated individuals should retire more than 10.6 years latter than those with less than an upper-secondary education attainment. But the paper also shows, more from an ex post point of view, that systematic retirement age differentiation based on expected health differences across groups would fail to match a significant portion of the full distribution of realised health status. In a world synonymous with systematic health-based retirement age differentiation, there would still be a ex post inequality, leading to what health economists call F-mistakes ([F]ailure of treatment i.e. no retirement for people in poor health) and E-mistakes ([E]xcessive treatment i.e. people in good health going for retirement).

The rest of this paper is organised as follows. Section 2 reviews the existing literature on retirement age differentiation and exposes our contribution to that literature. In Section 3, we present the SHARE data on (ill-)health used in this empirical paper. Section 4 exposes how we compute the differentiated retirement ages. Section 5 presents the main results of the paper, while Section 6 concludes.

2 Literature

This paper contributes to the literature on ageing and retirement, and more precisely on the importance of health (and indirectly longevity) heterogeneity across countries, across sociodemographic groups within each country, and also between individuals within these groups. It explores empirically whether (and to which extent) policymakers should/can take that heterogeneity into account when designing pension systems; in particular when deciding on legal retirement ages. This paper relates to the literature on health and retirement/labour supply, but with the important nuance that the focus is more on how age of eligibility should vary to account for the existence of a health gradient than on how the latter influences individuals' timing of retirement (for a review of the latter question see French and Jones, 2017). That shift of focus partially reflects the European context underpinning this paper, where retirement is still largely driven by State-edicted rules, and decided paternalistically by the authorities. Along those lines, this paper relates to the literature on demanding occupations and (early)retirement provision (Pestieau and Racionero, 2016; Vermeer et al., 2016). Also, it presents empirical evidence about the difficulty of properly targeting (or

[5]The result that women should be allowed to retire earlier based on their health is somewhat surprising as women have a higher life expectancy. But our result accords a recurrent result of the morbidity/mortality literature (Case and Paxson, 2005). Women have worse self-rated health and more hospitalisation episodes than men from early adolescence to old age, but are less likely to die at each age.

"tagging" using the term coined by Akerlof, 1978) individuals suffering for ill-health. The tagging problem was discussed theoretically in the context of pension/disability benefit design (Cremer et al., 2007) where individuals self-report they health status under imperfect information, creating adverse selection. The problem documented in the final section of this paper is not so much about imperfect information causing adverse selection. It has more to do with the relevance of using group average differences when what truly matters is addressing each individual's specific situation. A focus on group differences, with significant dispersion within each group, leads to what Cornia and Stewart (1993) calls F-mistakes (failure of treatment) and E-mistakes (excessive treatment). Finally, this paper also relates to normative economics and social choice theory, in particular the distinction between ex ante and ex post egalitarianism (Fleurbaey et al., 2016; Diamond, 1967). The equalisation of expected health that underpins most of this paper is a typical application of ex ante egalitarian social criteria to the context of retirement; whereas our focus in the final part of the paper on residual/unaccounted health differences, and the importance for each individual of her "realised" health, undoubtedly points at ex post egalitarianism.

3 Data

This paper uses waves 1-2 and 4-7 (2004-2017) of the SHARE survey; a total of 238,363 individuals$X$waves (Appendix, Table 6). All individuals in SHARE are 50 or older when interviewed for the first time. Data limitations of different sorts (missing values or variables, absence of repeated observations as the country participated only in one wave) explain that we retain in the analysis only 20 out of the 29 participating countries (AUT, BEL, CHE, CZE, DEU, DNK, ESP, EST, FRA, GRC, HRV, HUNG, ISR, ITA, LUX, NLD, POL, PRT, SVN, SWE).

SHARE contains a rich set of items describing people's physical health status that we use extensively here. SHARE also contains information about people's mental and cognitive health, but we do not utilise it in this paper. Most health items are self-reported, and many are subjective in the sense that they correspond to how people perceive and self-assess their overall health status (Table 1). But SHARE questionnaires also explicitly refer to many specific health conditions — diagnosed by health professionals (heart attack, hypertension, cholesterol, stroke, diabetes, lung disease, cancer, ... see Table 2). SHARE interviewers also realise measurements like the maximum grip strength of respondents (last column of Table 2).

In what follows, we will make extensive use of physical ill-health indices. These are computed as the first principal component[6] of items listed in Table 2 and Table 3. The relationship of these health indices with age, in each of the 20 countries, is on display in the Appendix on Fig. 4. Quite logically we see that the incidence of ill-health goes up with age. However, there are important differences across countries. For instance at the age of 67, the ill-health index in Switzerland (CHE) at -.476 is much lower than in Estonia (EST) where is reaches .36 (Appendix, Fig. 4 long dash lines). There are also differences as to the intensity of the ill-health/age gradient. In other words, both the level and the slope of the solid curve vary internationally.

[6]The values reported later have been standardised internationally. This means that a one-unit change of the index corresponds to one standard deviation of the international distribution of the health index

Table 1: Subjective health evaluation. Respondents aged 50-79

	Poor health[a]	Self-perc. bad health[b]	Long-term illness[c]	Limits[d]	Limits[e]	Limits[f]
AUT	2.90	2.90	0.46	2.44	0.11	0.22
BEL	2.92	2.92	0.45	2.44	0.17	0.25
CHE	2.62	2.62	0.34	2.64	0.06	0.10
CZE	3.26	3.26	0.52	2.35	0.14	0.24
DEU	3.17	3.17	0.59	2.37	0.13	0.18
DNK	2.47	2.47	0.49	2.58	0.10	0.17
ESP	3.18	3.18	0.45	2.66	0.12	0.23
EST	3.75	3.75	0.70	2.23	0.22	0.33
FRA	3.08	3.08	0.43	2.51	0.12	0.17
GRC	2.83	2.83	0.31	2.75	0.06	0.18
HRV	3.24	3.24	0.58	2.37	0.15	0.24
HUN	3.59	3.59	0.66	2.32	0.17	0.40
ISR	2.95	2.95	0.49	2.57	0.17	0.40
ITA	3.11	3.11	0.36	2.58	0.10	0.17
LUX	2.97	2.97	0.46	2.45	0.11	0.18
NLD	2.85	2.85	0.46	2.35	0.07	0.16
POL	3.59	3.59	0.64	2.28	0.23	0.31
PRT	3.66	3.66	0.52	2.34	0.27	0.33
SVN	3.22	3.22	0.47	2.42	0.15	0.21
SWE	2.65	2.65	0.52	2.50	0.10	0.15

Source: SHARE 2004-2017
[a]:1-5 European scale
[b]:1-5 US scale
[c]:Yes (1) No (0).
[d]:Limited in activities because of health (3-1 scale).
[e]:Number of limitations with activities of daily living.
[f]:Limitations with instrumental activities of daily living.

Table 2: Health items: incidence of objective conditions (+ grip strength). Respondents aged 50-79

	Hart attack	Hyper tension	Cholesterol	Stroke	Diabete	Lung disease	Cancer	Ulcer	Parkinson	Cataract	Hip fracture	Mobility[a]	Grip [b]
AUT	0.10	0.39	0.22	0.04	0.12	0.06	0.04	0.04	0.01	0.07	0.01	1.24	35.15
BEL	0.09	0.33	0.31	0.03	0.10	0.06	0.05	0.06	0.01	0.05	0.02	1.28	35.88
CHE	0.06	0.28	0.15	0.02	0.07	0.04	0.04	0.02	-	0.06	0.01	0.64	35.72
CZE	0.12	0.49	0.25	0.04	0.17	0.07	0.05	0.05	0.01	0.08	0.02	1.38	34.91
DEU	0.10	0.41	0.19	0.03	0.13	0.07	0.07	0.03	0.01	0.07	0.01	1.19	36.78
DNK	0.08	0.32	0.23	0.03	0.07	0.07	0.05	0.03	0.01	0.06	0.01	0.82	37.78
ESP	0.08	0.36	0.28	0.02	0.15	0.05	0.04	0.03	0.01	0.07	0.01	1.30	30.51
EST	0.16	0.47	0.20	0.04	0.12	0.06	0.05	0.08	0.01	0.08	0.01	1.73	34.42
FRA	0.10	0.31	0.24	0.02	0.11	0.05	0.05	0.03	0.01	0.05	0.01	1.15	34.24
GRC	0.09	0.38	0.28	0.02	0.11	0.04	0.02	0.07	-	0.05	0.02	1.38	33.32
HRV	0.12	0.46	0.21	0.04	0.13	0.04	0.06	0.05	0.01	0.05	0.01	1.81	35.19
HUN	0.18	0.55	0.21	0.06	0.17	0.06	0.05	0.08	0.01	0.04	0.03	2.00	32.83
ISR	0.13	0.40	0.36	0.03	0.22	0.04	0.05	0.05	0.01	0.09	0.01	1.29	30.26
ITA	0.08	0.39	0.23	0.02	0.11	0.05	0.03	0.03	-	0.05	0.01	1.22	33.11
LUX	0.09	0.33	0.33	0.02	0.11	0.07	0.07	0.06	0.01	0.07	0.02	1.21	35.26
NLD	0.09	0.27	0.18	0.03	0.09	0.07	0.05	0.02	-	0.05	0.01	0.89	36.68
POL	0.16	0.44	0.23	0.04	0.14	0.05	0.04	0.06	0.01	0.06	0.01	1.90	34.24
PRT	0.10	0.46	0.41	0.04	0.19	0.06	0.06	0.08	-	0.08	0.02	1.94	30.34
SVN	0.10	0.44	0.26	0.03	0.13	0.05	0.05	0.06	-	0.06	0.02	1.53	35.36
SWE	0.10	0.36	0.17	0.03	0.10	0.04	0.06	0.02	0.01	0.08	0.02	0.88	36.25

Source: SHARE 2004-2017

[a]:Arm function and fine motor limitations.

[b]:Max. of grip strength measure.

4 Analytical Framework

We deploy a two-stage estimation using the SHARE data. Stage one aims at identifying, for each country j, the degree of retirement age differentiation around the age of 67[7] that would ensure its people retire with a level of (expected) ill-health equal to the international average. Formally, if Y_j^{67} represents the average ill-health index of respondents aged 67 in country j and Y^{67} the international average, there is potentially an ill-health index gap in that country equal to the difference between these two terms. If β_j^{67} represents the marginal effect of a year of age on the ill-health index[8], then one can estimate the age of retirement ensuring equalisation of expected ill-health as

$$\begin{aligned} a_j &= 67 - \frac{|Y_j^{67} - Y^{67}|}{\beta_j^{67}} \text{ if } Y_j^{67} > Y^{67} \\ a_j &= 67 + \frac{|Y_j^{67} - Y^{67}|}{\beta_j^{67}} \text{ if } Y_j^{67} < Y^{67} \end{aligned} \tag{1}$$

Stage two proceeds along the same lines as stage one, but within each country j and for each sociodemographic group k. The retirement age differentiation is computed around the stage-one-estimated and country-specific retirement age a_j, using the ill-health gap applicable to group k and of the marginal impact of a year of age on the ill-health index $\beta_{j,k}^{a_j}$ of that group around age a_j.

$$\begin{aligned} a_{j,k} &= a_j - \frac{|Y_{j,k}^{a_j} - Y^{a_j}|}{\beta_{j,k}^{a_j}} \text{ if } Y_{j,k}^{a_j} > Y^{a_j} \\ a_{j,k} &= a_j + \frac{|Y_j^{a_j} - Y^{a_j}|}{\beta_{j,k}^{a_j}} \text{ if } Y_{j,k}^{a_j} < Y^{a_j} \end{aligned} \tag{2}$$

Key with such a setting are estimates of the ill-health index gaps and of the βs. As to the latter, we resort to fixed-effect estimation (FE) that exploits the panel dimension of SHARE data (remember that SHARE consists of up to 7 waves, measuring individuals' ill-health every 2-3 years). In other words, the estimated βs only reflect the within-respondent deterioration of health over time. This eliminates many of the biases that may contaminate

[7] Internationally, the age of 67 is gradually becoming the new reference (OCDE, 2019). Not so long ago, the statutory retirement age was rather 65, at least for men. This said, we lower that age to 61, 63 and 65 when doing robustness analysis (Section 5.2).

[8] Note the presence of subscript j indicating that the marginal effect can vary from country to country, and the superscript 67 that it is calculated around the age of 67.

estimates based on cross-sectional data.

5 Results

5.1 Health-equalising differentiated retirement ages

Key results appear on Fig. 1 and Table 3. They display the rather important degree of retirement age differentiation that would be required to equalise ill-health at the moment of retirement. Focusing on cross-country differences, we see that Poland (POL) is the country where the age of retirement would have to be the lowest at 52.39. By contrast, it would have to be as high a 79.45 in Switzerland (CHE). By construction, these retirement age differences mostly reflect ill-health gaps among elderly people. And it is quite interesting to visualise how much the former — and presumably also the latter — parallel GDP per capita differences (Fig. 2). This result if confirmed by a regression analysis of the differentiated retirement ages (Table 7 in Appendix). The higher GDP per head but also capital intensity (i.e. a proxy of the economic structure of the economy), the higher health-equalising retirement age.

Also, inside each country, additional differentiation of the age of retirement would be needed to account for the significant variations of health across sociodemographic groups. In Poland (POL) for instance, retirement age should range from 43.97 to 60.67. And in Switzerland (CHE) our estimates are that it should vary between 73.42 and 82.61. The combination of across- and within-country ill-health differences among elderly individuals results in ill-health-equalising retirement ages ranging from 40 (Hungary (HUN), low-educated females) to 82.72 (Netherlands (NLD), highly-educated males).

In the Appendix, Table 8 reports our estimates of the across-country ill-health gaps (2^{nd} column), as well as their degree of significance (4^{th} column). The last two columns report the FE-estimated marginal impact of one extra year of age on the ill-health index (β). The ratio of the ill-health gap by these βs is what drives the results presented in the first two columns of Table 2. The health gaps and βs underpinning the within-country-across-sociodemographic-group retirement age differentiation are reported in the Appendix in (resp.) Table 9 and Table 10.

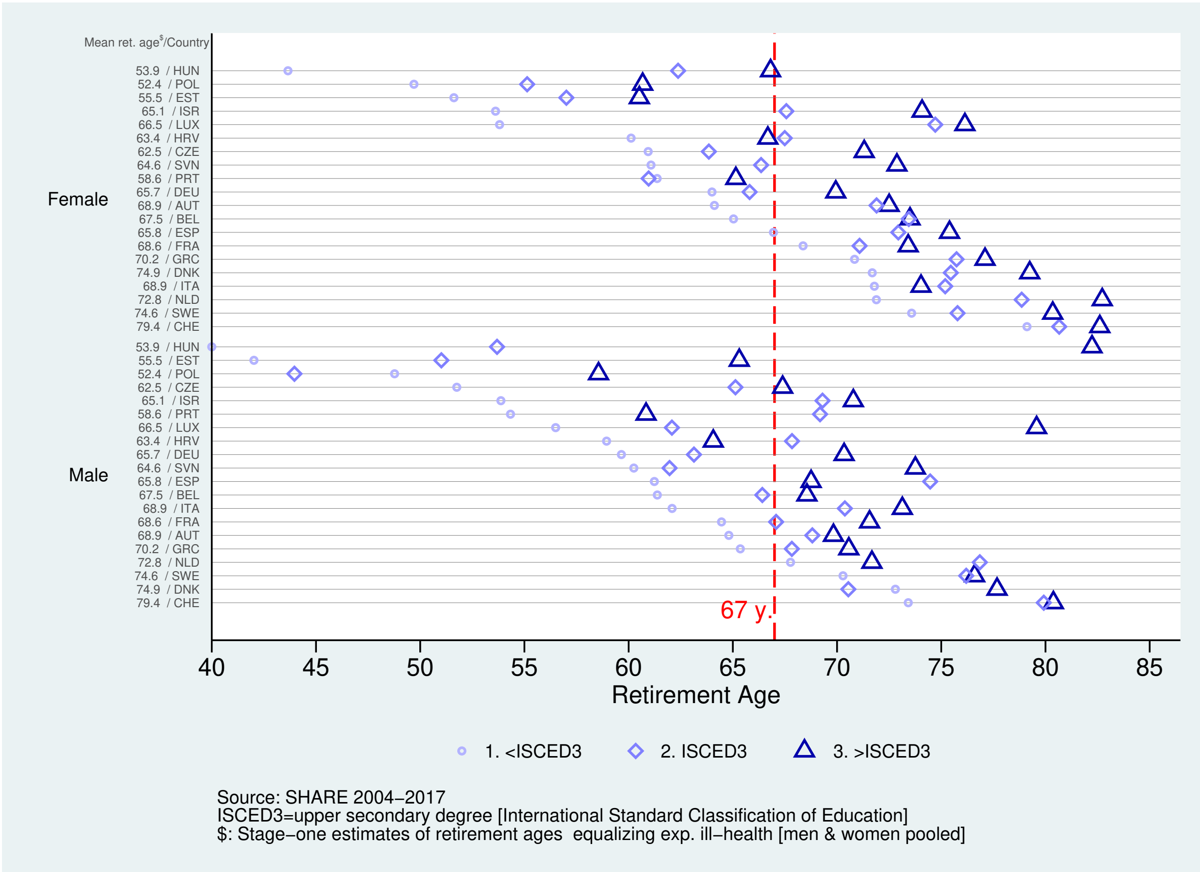

Figure 1: Differentiated retirement ages equalising (expected) ill-health, across and within countries

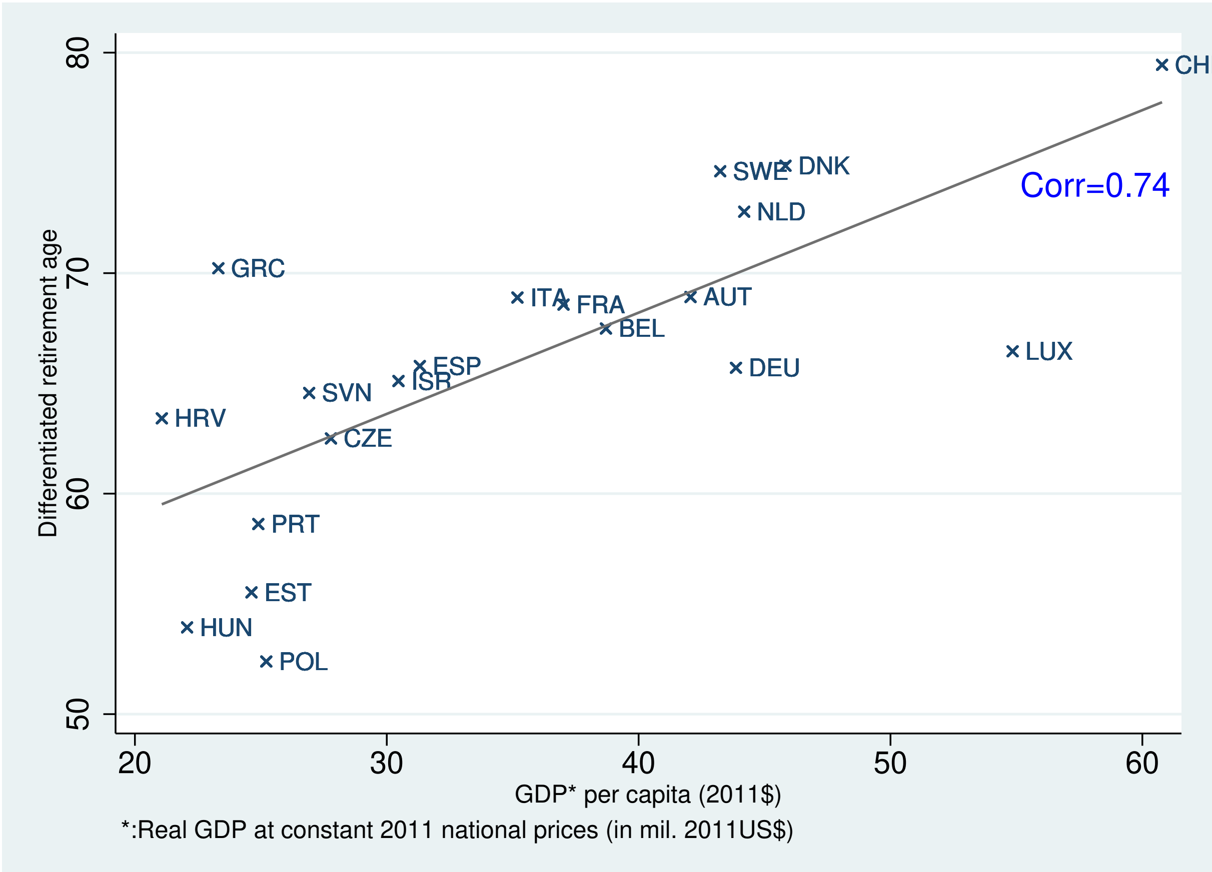

Figure 2: Differentiated retirement ages equalising (expected) ill-health across countries. Correlation with GDP per head

Table 3: Differentiated retirement age equalising ill-health. Between- and within-country differentiation

	Diff. ret.	Gap to int. ref.(67)	Diff. ret.F	Diff. ret. M	Male <ISCED3	Male ISCED3[a]	Male >ISCED3	Female <ISCED3	Female ISCED3	Female >ISCED3	F-M gap	ISCED Gap	ret. max	ret. min	max-min
AUT	68.92	1.92	67.82	69.50	64.11	71.90	72.50	64.81	68.81	69.83	-1.69	-6.70	72.50	64.11	8.38
BEL	67.49	0.49	65.45	70.66	65.03	73.44	73.50	61.38	66.41	68.55	-5.21	-7.82	73.50	61.38	12.12
CHE	79.45	12.45	77.91	80.79	79.11	80.66	82.61	73.42	79.92	80.38	-2.89	-5.23	82.61	73.42	9.19
CZE	62.50	-4.50	61.42	65.36	60.94	63.85	71.30	51.75	65.12	67.39	-3.94	-13.00	71.30	51.75	19.55
DEU	65.71	-1.29	64.38	66.58	64.00	65.81	69.94	59.65	63.13	70.34	-2.21	-8.31	70.34	59.65	10.69
DNK	74.87	7.87	73.67	75.46	71.69	75.46	79.24	72.80	70.54	77.68	-1.79	-6.22	79.24	70.54	8.70
ESP	65.78	-1.22	68.15	71.76	66.95	72.94	75.40	61.23	74.47	68.75	-3.61	-7.98	75.40	61.23	14.16
EST	55.52	-11.48	52.78	56.38	51.62	57.01	60.51	42.02	51.02	65.31	-3.60	-16.09	65.31	42.02	23.29
FRA	68.57	1.57	67.70	70.95	68.37	71.08	73.41	64.46	67.08	71.56	-3.26	-6.07	73.41	64.46	8.96
GRC	70.22	3.22	67.92	74.56	70.84	75.73	77.10	65.36	67.83	70.56	-6.64	-5.73	77.10	65.36	11.74
HRV	63.42	-3.58	63.61	64.76	60.12	67.49	66.68	58.94	67.84	64.06	-1.15	-5.84	67.84	58.94	8.90
HUN	53.93	-13.07	58.64	57.61	43.66	62.37	66.81	40	53.69	82.23	1.03	-32.69	82.23	40	42.23
ISR	65.11	-1.89	64.65	65.09	53.61	67.57	74.08	53.87	69.30	70.78	-0.44	-18.69	74.08	53.61	20.47
ITA	68.89	1.89	68.53	73.67	71.79	75.19	74.03	62.08	70.37	73.13	-5.14	-6.64	75.19	62.08	13.10
LUX	66.46	-0.54	66.05	68.22	53.81	74.71	76.13	56.50	62.08	79.57	-2.17	-22.70	79.57	53.81	25.76
NLD	72.79	5.79	72.10	77.82	71.89	78.86	82.72	67.77	76.85	71.67	-5.73	-7.37	82.72	67.77	14.96
POL	52.39	-14.61	50.43	55.17	49.70	55.13	60.67	48.77	43.97	58.56	-4.74	-10.38	60.67	43.97	16.71
PRT	58.62	-8.38	61.45	62.49	61.37	60.96	65.14	54.33	69.18	60.84	-1.04	-5.14	69.18	54.33	14.85
SVN	64.57	-2.43	65.32	66.77	61.07	66.36	72.87	60.25	61.96	73.76	-1.44	-12.65	73.76	60.25	13.51
SWE	74.62	7.62	74.36	76.57	73.58	75.78	80.35	70.29	76.20	76.60	-2.21	-6.54	80.35	70.29	10.06
Int. ref.	67														

Source: SHARE 2004-2017

[a]: ISCED3=upper secondary degree [International Standard Classification of Education]"

5.2 Robustness Analysis

Given that the health/age relationship is usually non-linear, one may expect the above results to vary with the level of reference retirement age result chosen. We have fixed it at 67, which might be perceived as quite high, especially since in some countries the legal retirement age is still 60 or 62. It is thus useful to examine the robustness of our results to a range of (lower) reference retirement ages. To that end we replicate the above analysis using ages ranging from 61 to 67 by steps of 2 years. Synthetic results are reported in the four first columns of Table 4, with the last of the four corresponding to the age of 67 used so far.[9]

Another type of robustness test consists of considering alternative definitions of health. That is possible with SHARE as it informs on physical health but also mental health.[10] What is more, SHARE distinguishes two dimensions of physical health that we have so far aggregated: subjective physical health (Table 1) and objective physical health (Appendix, Table 10) i.e. a series of doctor-diagnosed conditions or surveyor measurements (grip strength, mobility...). Synthetic robustness results for subjective physical health only, objective health only and overall health (combining physical and mental health) are reported in the four last columns of Table 4, with the last of the four columns corresponding to the definition of health used above.[11]

With both robustness extensions, the take-home message is that the results are qualitatively very similar to those obtained so far; with the possible nuance that the inclusion of mental health increases the required degree of retirement differentiation to achieve (expected) health equality, and also to small differences regarding estimated of the retirement gender gap.

[9]Full results are to be found in the Appendix as Fig. 5, 6, 7 or as Tables 11, 12, 13.

[10]In SHARE, mental ill-health essentially means depression. The detailed list of items used to assess mental health in SHARE are reported in Table 14 in the Appendix. They logically cover several dimensions of respondents' mood or feelings: melancholy, diminished interest, sleep disorders or suicidal thoughts. They represent depressive symptoms that, once taken together, give a fair idea of people's mental health. The 12 items are those used to build the EURO-D scale which has been validated in earlier cross-European studies of depression prevalence (Prince et al., 1999).

[11]And again, a more detailed characterisation of the differentiated retirement ages can be found in the Appendix in Fig. 8, 9, 10 and Tables 15, 16, 17.

Table 4: Robustness Analysis: sensitivity of results to different definitions of the ref. age of retirement and health – regression analysis

	Ref. age [physical health]				Health [ref.age=67]			
	61	63	65	67	Phys&Mental	Obj.phys	Subj.phys	Phys.
Female (ref. Male)	-2.82***	-3.04***	-3.36***	-2.89***	-6.46***	-6.44***	0.09	-2.89***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.883)	(0.001)
ISCED3 (ref. <ISCED3)	5.85***	6.43***	5.74***	6.63***	6.89***	4.28***	5.61***	6.63***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
>ISCED3	11.48***	11.28***	11.06***	10.59***	11.29***	7.92***	9.64***	10.59***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BEL (ref. AUT)	-2.04	-1.79	-1.34	-0.61	-2.11	-1.84	0.24	-0.61
	(0.357)	(0.425)	(0.581)	(0.809)	(0.384)	(0.451)	(0.903)	(0.802)
CHE	9.19***	8.82***	11.72***	10.69***	11.47***	9.73***	12.10***	10.69***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CZE	-4.87*	-4.54*	-4.45	-5.27*	-5.26*	-3.29	-6.06**	-5.27*
	(0.030)	(0.045)	(0.069)	(0.038)	(0.032)	(0.178)	(0.003)	(0.032)
DEU	-6.15**	-5.25*	-3.47	-3.18	-2.90	-0.37	-4.83*	-3.18
	(0.006)	(0.021)	(0.155)	(0.207)	(0.233)	(0.878)	(0.015)	(0.191)
DNK	4.45*	4.65*	5.81*	5.91*	9.05***	3.14	7.74***	5.91*
	(0.046)	(0.040)	(0.018)	(0.020)	(0.000)	(0.199)	(0.000)	(0.016)
ESP	1.55	1.67	1.22	1.30	0.49	-1.39	2.54	1.30
	(0.483)	(0.457)	(0.614)	(0.606)	(0.839)	(0.567)	(0.197)	(0.593)
EST	-14.54***	-15.35***	-14.81***	-14.08***	-21.12***	-6.44*	-14.46***	-14.08***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.013)	(0.000)	(0.000)
FRA	0.10	-0.11	-0.80	0.67	-2.59	1.01	0.79	0.67
	(0.964)	(0.962)	(0.742)	(0.791)	(0.286)	(0.677)	(0.687)	(0.783)
GRC	4.55*	3.75	3.07	2.58	1.20	-1.85	9.08***	2.58
	(0.042)	(0.097)	(0.207)	(0.306)	(0.620)	(0.448)	(0.000)	(0.289)
HRV	-3.99	-4.20	-5.12*	-4.47	-5.95*	-2.93	-6.04**	-4.47
	(0.073)	(0.064)	(0.037)	(0.078)	(0.021)	(0.229)	(0.003)	(0.067)
HUN	-10.79***	-10.68***	-10.88***	-10.53***	-1.96	-4.74	-4.90*	-8.28**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.420)	(0.085)	(0.028)	(0.002)
ISR	0.64	-0.72	-2.39	-3.79	-4.33	-11.15***	-3.51	-3.79
	(0.773)	(0.750)	(0.326)	(0.134)	(0.077)	(0.000)	(0.075)	(0.120)
ITA	4.65*	4.65*	5.15*	2.44	7.13**	3.12	2.31	2.44
	(0.038)	(0.040)	(0.036)	(0.333)	(0.004)	(0.201)	(0.239)	(0.315)
LUX	-2.84	-4.37	-2.11	-1.53	-20.65***	-1.14	-2.36	-1.53
	(0.200)	(0.054)	(0.385)	(0.544)	(0.000)	(0.640)	(0.230)	(0.529)
NLD	1.96	2.11	2.93	6.30*	-6.50**	9.99***	3.31	6.30*
	(0.376)	(0.348)	(0.229)	(0.014)	(0.009)	(0.000)	(0.093)	(0.011)
POL	-13.10***	-14.16***	-15.55***	-15.86***	-2.74	-8.45***	-19.30***	-15.86***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.261)	(0.001)	(0.000)	(0.000)
PRT	-6.02**	-5.48*	-6.48**	-6.69**	7.39**	-6.50**	-7.32***	-6.69**
	(0.007)	(0.016)	(0.009)	(0.009)	(0.003)	(0.009)	(0.000)	(0.007)
SVN	-0.66	-0.76	-0.88	-2.61		-2.59	-1.48	-2.61
	(0.764)	(0.736)	(0.716)	(0.299)		(0.288)	(0.451)	(0.282)
SWE	3.81	4.20	5.48*	6.80**		8.05**	6.39**	6.80**
	(0.087)	(0.064)	(0.026)	(0.008)		(0.001)	(0.001)	(0.006)
Constant	58.65***	60.73***	62.84***	64.37***	66.87***	67.46***	63.89***	64.37***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	120	120	120	120	108	120	120	120

Source: SHARE 2004-2017

p-values in parentheses: $^{*}p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: The (health equalising) differentiated retirement ages are computed using *i)* (4 first columns) different international reference ages for retirement i.e. 61,63,65 and 67 used above or *ii)* (4 last columns) different definitions of health: overall health (combining physical and mental health), subjective physical health, objective health and physical health (combining subjective and objective items) that we have used so far? The are then regressed on gender, education and country dummies. The stability of coefficients suggest that results are robust to changes in international ref. retirement age or the def. of health.

5.3 The limit to retirement age differentiation based on ex ante equalisation

In this section we focus on what happens inside each country, and we examine and discuss the importance of what econometricians call the variance "within" sociodemographic groups. So far, inside each country, we have essentially looked at the "between" group variance in an attempt to differentiate retirement age (i.e. introduce a certain dose of tagging Akerlof, 1978). We have shown that (ill-)health varies significantly (in the statistical sense) between groups at any given age beyond 50 (Appendix, Table 13). And we have used these differences (in combination with group-specific age/ill-health gradients) to compute differentiated retirement ages ensuring equalisation of expected ill-health across groups (Table 3), contributing thus to the realisation of ex ante equality across pensioners (Diamond, 1967).

But this amounts to focusing on the average characterising the different sociodemographic groups, ignoring the potentially huge dispersion within each of them in terms of realised health, and thus the full magnitude of the ex post distribution of conditions. From an ethical perspective, both ex ante and ex-pot egalitarianism are attractive (Fleurbaey et al., 2016), and it is beyond the reach of this paper to rank them. But we would posit that ex post egalitarians should be concerned to observe that systematic retirement age differentiation as modelled above is still synonymous with what Cornia and Stewart (1993) calls F-mistake and E-mistake errors. The first type of errors, synonymous with "failure of treatment", corresponds to individuals suffering from ill-health but who belong to the socioeconomic group that — on average — fairs relatively well and got assigned a high retirement age. The second type of errors — synonymous with "excessive" treatment, is just the symmetric case; i.e. individuals whose health is expected to be relatively bad given the socioeconomic group they belong to, and thus are allowed to retire early, but who *de facto* are in good shape. Note that type-E and type-F errors could easily be related to the concept of statistical discrimination. Arrow (1971) and Phelps (1972) explained in their seminal works that a decision maker could based his decision on average characteristics and, by doing so, some high-performing members belonging to an under-performing group are discriminated against. The same could arise in the context of differentiated retirement. In particular, frail "rich" individuals risk being penalised because the social planner only considers the average health status of the rich as a group.

Fig. 3 illustrates, for some of the countries forming our data set, how difficult it is to avoid Type-F and Type-E errors and achieve ex post equalisation. Both errors remain very frequent whatever the age band considered. There is no doubt that highly educated females are, on average, in better health than their less-educated peers. The doted line in grey is clearly located to the left of the solid line. But it is also clear that distributions overlap. There are highly-educated females with a high ill-health index (higher than the average for low-educated females). These would be denied early retirement in spite of their ill-health. Similarly, there are many low-educated women with a low ill-health index (lower than the average for highly-educated women). This hints at the possibility of many low-educated women in relatively good condition who would (illegitimately) be granted the right to retire early due to inaccurate tagging.

One way to go beyond visual evidence is to resort to variance decomposition techniques commonly used in microeconometrics. Table 5 contains the share of total country-level ill-health variance explained by the sociodemographic categories (Gender$X$Education) used above. As the last column suggests, that share is small, often inferior to 5%, and never larger than 9%.

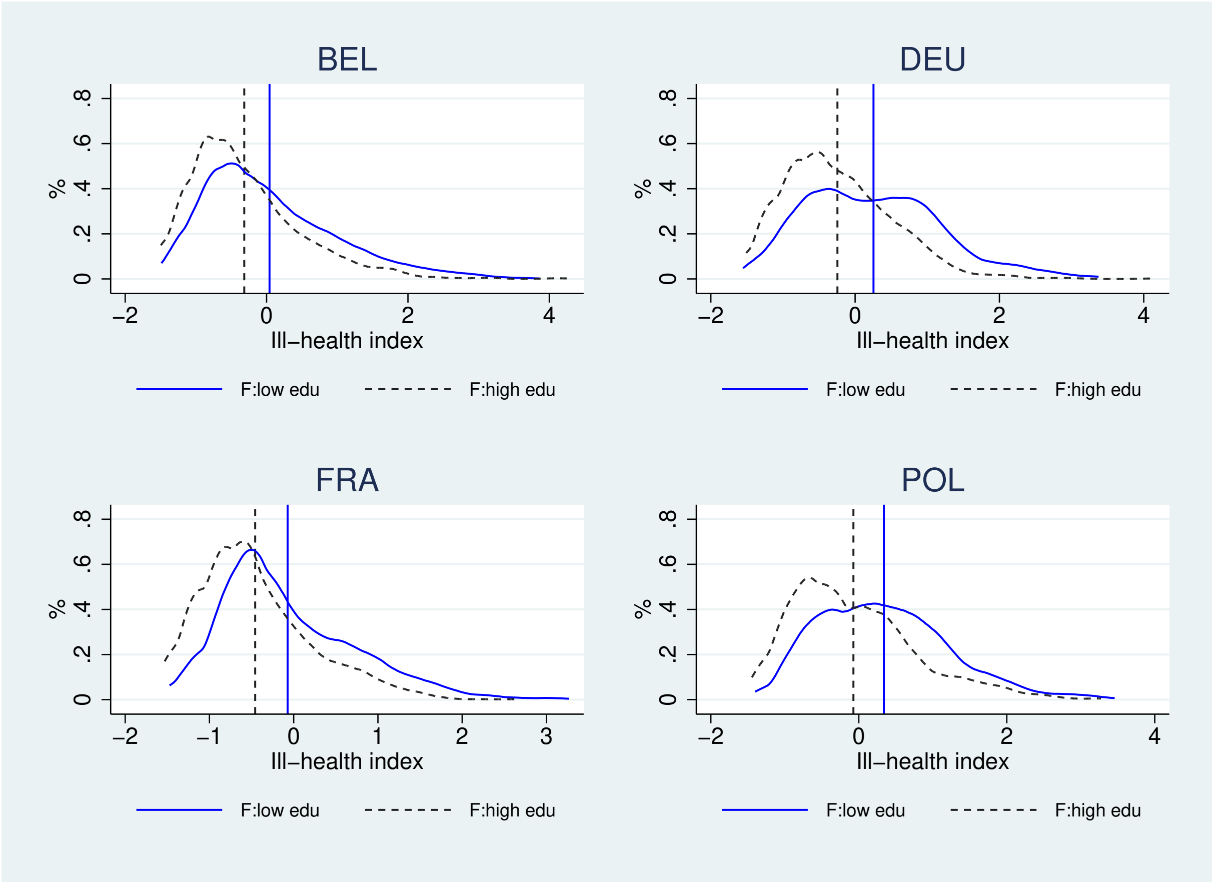

Figure 3: The difficulty to tag (importance of type-E and type-F errors). The case of low- vs. highly-educated females aged 55-65 in Germany (DEU), France (FRA), Belgium (BEL) and Poland (POL)

Table 5: Share of variance of ill-health inside countries explained by sociodemographic categories

	Ill-health index	Variance ill-health	Share explained [a]
AUT	-0.24	0.75	0.02
BEL	-0.17	0.76	0.03
CHE	-0.54	0.61	0.02
CZE	0.03	0.76	0.09
DEU	-0.02	0.69	0.06
DNK	-0.47	0.88	0.03
ESP	-0.10	0.69	0.02
EST	0.41	0.69	0.09
FRA	-0.18	0.65	0.02
GRC	-0.37	0.69	0.05
ITA	-0.13	0.69	0.02
LUX	-0.09	0.80	0.08
NLS	-0.24	0.67	0.02
POL	0.33	0.76	0.06
PRT	0.32	0.64	0.05
SVN	-0.04	0.69	0.09
SWE	-0.40	0.78	0.03

Source: SHARE 2004-2017
[a]:Using six sociodemographic groups (i.e. gender X education, where education consists of 3 levels [<ISCED3, ISCED3=upper secondary degree, >ISCED3])

6 Concluding Remarks

This paper has explored the idea of a differentiated retirement age policy aimed at accounting for people's health inequality when they grow older. Using European SHARE data on health and how the latter varies across countries, and within countries across sociodemographic groups, we compute the degree of retirement age differentiation that would be required to equalise (ill)-health at the moment of retirement. Such a policy would be a way to systematise earlier suggestions that pensions reforms (in particular those aimed a raising the retirement age) should make an exception for workers with demanding occupations, since health considerations may make it unreasonable to expect them to work longer. They also echo recent work on the fairness of retirement systems under unequal lifetime (Ponthiere, 2020); health and residual life expectancy are indeed highly correlated.

Results of this paper are essentially fourfold.

First, European elderly populations vary significantly in terms of their health around the typical retirement ages. This is true across countries (with tentative evidence that higher GDP per capita translates into better health), but also within countries, between sociodemographic groups with lower-educated elderly individuals being systematically less healthy than their more educated peers (something that might also be related to income differences).

Second. Unsurprisingly, ageing causes a decline of health. This is true in every European country considered here and across every sociodemographic group we examined. But this almost trivial result also means that advancing (or postponing) the age or retirement is a way to equalise (expected) health at the moment of retirement.

Third, that equalisation can be achieved both across countries and inside each country, but requires extensive retirement age differentiation. To equalise expected health for the different sociodemographic groups forming their populations, most European countries would have to admit more than 10 years of difference between those with the worst vs. best health status.

Fourth, there are limitations as to what can be achieved via health-based retirement age differentiation and the underlying principle of ex ante equalisation of health. SHARE data clearly show that such a policy would still be prone to ex post inequalities, that consists of extensive F-mistake errors (failure of treatment i.e. retirement rights not granted to people in poor health) and E-mistake errors (excessive treatment i.e. rights granted to people in good health). The importance of to be given to these errors is a matter of ethical perspective. People who only care about ex ante equalisation would probably consider that not much should be done about the residual/within group differences and these F- and E-mistakes. The ex post residual inequalities are reflected in what econometricians call "within" socioeconomic group variation of health status. Retirement age differentiation would, by construction, be based on "between" group statistical (thus ex ante estimated) differences. In Section 5.3, we show that allowing retirement age to differ across 6 groups (3 educational attainment levels X gender) would account for (at most) 9% of country-level health variance. If what matters socially is the equalisation of each individual's health upon retirement – ie. ex post equalisation – then the gains from abandoning a uniform retirement age policy are probably limited.

Of course, other policies than differentiated retirement can be implemented. And some of our results are supportive of this option. For instance, the sheer magnitude of realised/ex post health status differences across individuals highlighted here legitimises upstream public-health policies, or other social policies aimed at combating health inequality, already at early stages of life. Also, the importance of the unaccounted interindividual health inequalities within our retirement groups probably calls for a less statistical/ex ante approach, and a more individualised/ex post treatment of health differences. Would it be feasible? Probably not as part of a retirement policy. But maybe via the disability insurance, or more precisely the screening procedure that determines the eligibility of individuals to disability benefits. Contrary to the statisticians telling retirement policymakers what could be done exploiting expected/ex ante health differences across sociodemographic groups, the doctors in charge of the screening are (at least potentially) assessing each individual's realised health. And this probably puts them in a position to achieve what theorists call ex post equality. In many countries, disability benefits are closely linked to old age pension systems. And their role is to provide, on a case by case basis, "retirement" opportunities (i.e. replacement earning) to people who suffer from ill-health but aren't yet eligible for proper retirement/pension money.[12] And it is also common that workers who receive disability benefits subsequently shift to the old-age pension system once they reach the official retirement age. This raises the question of which policy is best suited to account for health inequalities. Should policymakers go for *i)* socioeconomic, group-based differentiated retirement ages as we simulate in this paper? Or should they stick to what has been the historical norm; i.e. *ii)* a unique/uniform retirement age, supplemented by disability benefits conditional on individualised — but time-consuming and also error-prone (Cremer et al., 2007) — assessment of health status?

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[12]There is evidence (Banks et al., 2012) that with higher official retirement age, fewer early retirement schemes, and also stricter unemployment benefits, disability benefits have come over time to represent an important pathway to retirement.

CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), FP7 (SHARE-PREP: GA N211909, SHARE-LEAP: GA N227822, SHARE M4: GA N261982) and Horizon 2020 (SHARE-DEV3: GA N676536, SERISS: GA N654221) and by DG Employment, Social Affairs Inclusion. Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, HHSN271201300071C) and from various national funding sources is gratefully acknowledged (see www.share-project.org)

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Appendix

Table 6: Number of respondents by wave

Wave	AUT	BEL	CHE	CZE	DEU	DNK	ESP	EST	FRA	GRC	HRV	HUN	ISR	ITA	LUX	NLD	POL	PRT	SVN	SWE	Total
1	607	1,653	409	-	1,239	704	946	-	1,179	1,097	-	-	910	1,055	-	1,261	-	-	-	1,266	12,326
2	916	2,647	1,243	2,303	2,173	2,189	1,794	-	2,215	2,650	-	-	1,809	2,331	-	2,285	2,046	-	-	2,268	28,869
4	4,006	4,304	3,172	4,491	1,318	1,906	2,792	5,357	4,390	-	-	2,576	-	2,754	-	2,342	1,410	1,633	2,178	1,574	46,203
5	3,315	4,528	2,518	4,536	4,825	3,520	4,792	4,206	3,526	-	-	-	1,680	3,583	1,330	3,499	-	-	2,339	3,786	51,983
6	2,523	4,639	2,292	3,914	3,704	3,177	3,864	4,098	3,043	3,824	2,068	-	1,340	4,072	1,296	-	1,457	1,270	3,348	3,078	53,007
7	2,338	3,759	1,835	3,163	2,996	2,711	3,134	3,350	2,482	2,259	1,969	1,206	1,346	3,238	924	-	3,808	323	2,731	2,403	45,975
Total	13,705	21,530	11,469	18,407	16,255	14,207	17,322	17,011	16,835	9,830	4,037	3,782	7,085	17,033	3,550	9,387	8,721	3,226	10,596	14,375	238,363
N	238,363																				

Source: SHARE 2004-2017

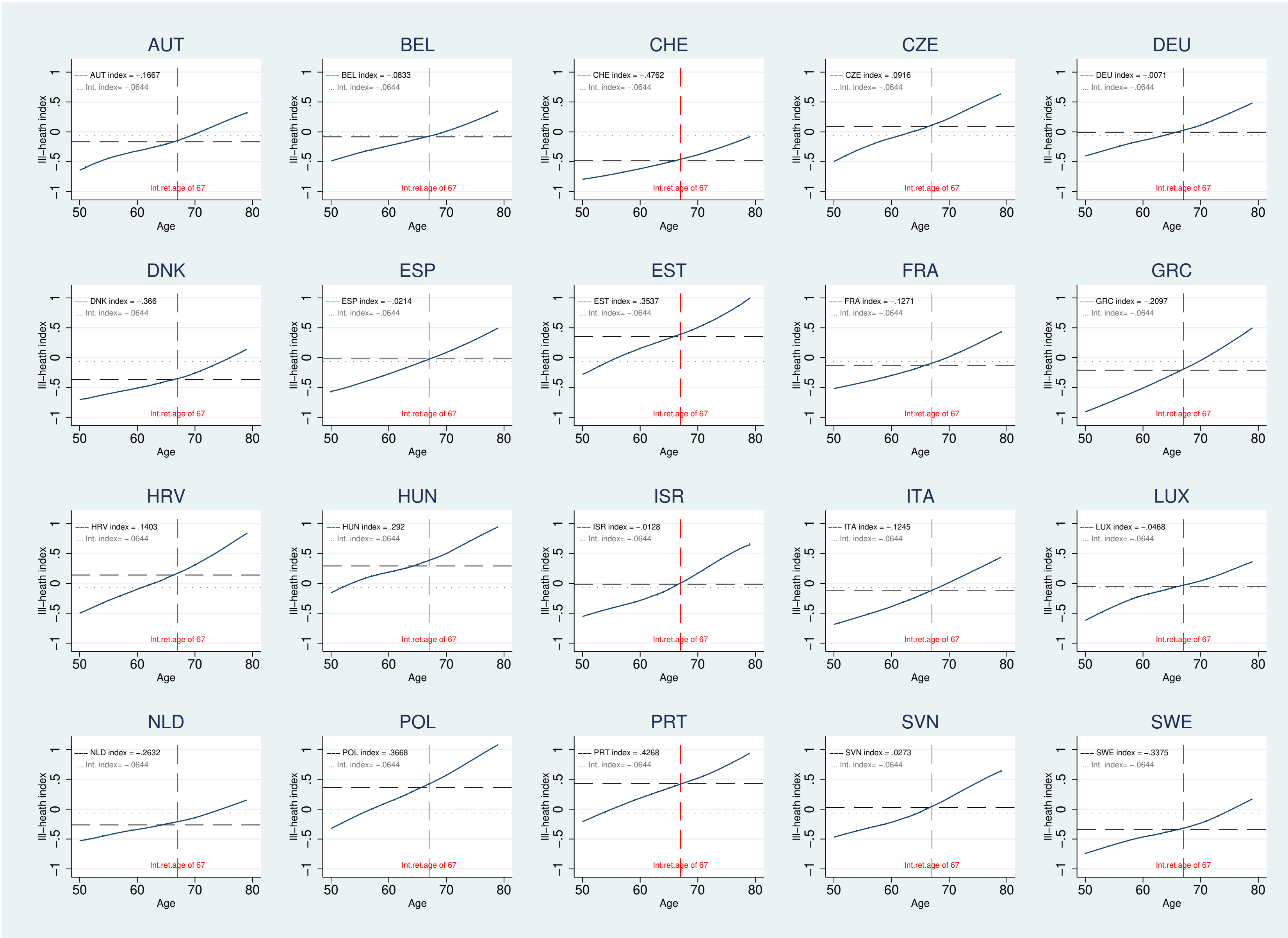

Figure 4: Ill-health index systematically rises with age, but intercept and slope vary across country

Table 7: Regression Analysis of the macroeconomic determinants of the differentiated retirement ages

	model1	model2
Female (ref. male)	-2.89***	-2.89**
	(0.000)	(0.006)
ISCED3 (ref.<ISCED3	6.63***	6.63***
	(0.000)	(0.000)
>ISCED3	10.59***	10.59***
	(0.000)	(0.000)
GDP per capita		0.52***
		(0.000)
Annual working hour		0.00
		(0.609)
Employment rate		-0.65***
		(0.000)
Human capital index		2.00
		(0.421)
Capital per head		0.06**
		(0.008)
Share of gov. consumption		0.38
		(0.985)
Constant	64.37***	53.78***
	(0.000)	(0.000)
Controls	Country FE	
Observations	120	120

Source: SHARE 2004-2017, Penn World Table version 9.1

p-values in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < -1$

Table 8: Ill-health cross-country differences around the age of 67

	[b] Ill-health index[a]	[b]-[a] Ill-health gap (ref. intern.av.)	H0 [b]-[a]=0 (p-value)	β^{b} marginal impact of one year of age	H0 β=0 (p-value)
Int. ref. [a]	-0.064				
AUT	-0.167	-0.10	0.0000	0.0534	0.0000
BEL	-0.083	-0.02	0.3132	0.0386	0.0000
CHE	-0.476	-0.41	0.0000	0.0331	0.0000
CZE	0.092	0.16	0.0000	0.0347	0.0000
DEU	-0.007	0.06	0.0030	0.0443	0.0000
DNK	-0.366	-0.30	0.0000	0.0383	0.0000
ESP	-0.021	0.04	0.0236	0.0354	0.0000
EST	0.354	0.42	0.0000	0.0364	0.0000
FRA	-0.127	-0.06	0.0009	0.0399	0.0000
GRC	-0.210	-0.15	0.0000	0.0451	0.0000
HRV	0.140	0.20	0.0000	0.0571	0.0000
HUN	0.292	0.36	0.0000	0.0273	0.2257
ISR	-0.013	0.05	0.1316	0.0273	0.0000
ITA	-0.124	-0.06	0.0012	0.0317	0.0000
LUX	-0.047	0.02	0.6923	0.0324	0.0000
NLD	-0.263	-0.20	0.0000	0.0344	0.0000
POL	0.367	0.43	0.0000	0.0295	0.0000
PRT	0.427	0.49	0.0000	0.0586	0.0000
SVN	0.027	0.09	0.0002	0.0377	0.0000
SWE	-0.338	-0.27	0.0000	0.0358	0.0000

Source: SHARE 2004-2017

[a]: A higher value indicates a poorer health

[b]: Estimated using "within" respondent variation of ill-health across waves (ie. FE estimation).

Table 9: Ill-health within-country differences. Gaps by gender (Male,Female) and educational attainment[ISCED])

	Ill-health	Male index			Female index			Male, H0:gap=0			Female,, H0: gap=0		
	index[a]	<ISCED3	ISCED3[b]	>ISCED3	<iISCED3	ISCED3	>ISCED3	<ISCED3	ISCED3	>ISCED3	<ISCED3	ISCED3	>ISCED3
								[p-value]	[p-value]	[p-value]	[p-value]	[p-value]	[p-value]
AUT	-0.167	0.31	-0.15	-0.17	0.29	0.01	0.01	0.0048	0.0017	0.0010	0.0000	0.9031	0.4705
BEL	-0.083	0.11	-0.22	-0.25	0.25	0.04	0.04	0.0278	0.0000	0.0000	0.0000	0.4400	0.4432
CHE	-0.476	0.01	-0.05	-0.11	0.14	-0.01	-0.01	0.9210	0.3049	0.2173	0.0256	0.8148	0.8736
CZE	0.092	0.06	-0.07	-0.33	0.26	-0.09	-0.09	0.2206	0.1087	0.0000	0.0000	0.0041	0.0033
DEU	-0.007	0.09	-0.00	-0.20	0.34	0.10	0.10	0.5071	0.9026	0.0000	0.0000	0.0018	0.0023
DNK	-0.366	0.13	-0.03	-0.18	0.10	0.14	0.14	0.2148	0.6828	0.0124	0.1520	0.0782	0.2462
ESP	-0.021	-0.05	-0.19	-0.32	0.16	-0.24	-0.24	0.1479	0.0032	0.0000	0.0000	0.0003	0.1736
EST	0.354	0.17	-0.06	-0.27	0.46	0.14	0.14	0.0664	0.1797	0.0000	0.0000	0.0002	0.0000
FRA	-0.127	0.01	-0.10	-0.22	0.17	0.04	0.04	0.8229	0.0412	0.0012	0.0000	0.3356	0.0635
GRC	-0.210	-0.03	-0.27	-0.33	0.20	0.10	0.10	0.5732	0.0000	0.0000	0.0000	0.1973	0.8908
HRV	0.140	0.14	-0.27	-0.56	0.15	-0.13	-0.13	0.0912	0.0748	0.0001	0.0211	0.2761	0.4814
HUN	0.292	0.28	-0.23	-0.51	0.81	0.01	0.01	0.3134	0.0275	0.0067	0.0000	0.9435	0.0000
ISR	-0.013	0.39	-0.07	-0.24	0.24	-0.11	-0.11	0.0003	0.4313	0.0010	0.0063	0.0926	0.0203
ITA	-0.124	-0.11	-0.23	-0.26	0.20	-0.03	-0.03	0.0015	0.0000	0.0027	0.0000	0.6553	0.1768
LUX	-0.047	0.34	-0.29	-0.44	0.30	0.21	0.21	0.0088	0.0007	0.0000	0.0015	0.0391	0.0480
NLD	-0.263	0.03	-0.22	-0.28	0.18	-0.14	-0.14	0.6165	0.0115	0.0006	0.0015	0.1581	0.7615
POL	0.367	0.09	-0.11	-0.31	0.09	0.14	0.14	0.5578	0.0432	0.0405	0.2669	0.0054	0.0006
PRT	0.427	-0.15	-0.27	-0.33	0.26	-0.35	-0.35	0.0295	0.2068	0.0219	0.0001	0.0117	0.4777
SVN	0.027	0.26	-0.07	-0.33	0.17	0.06	0.06	0.0058	0.0851	0.0000	0.0010	0.1869	0.0000
SWE	-0.338	0.05	-0.04	-0.22	0.15	-0.04	-0.04	0.3398	0.5381	0.0008	0.0019	0.4079	0.2903

Source: SHARE 2004-2017

[a]: A higher value indicates a poorer health

[b]: ISCED3=upper secondary degree [International Standard Classification of Education]"

Table 10: Marginal impact of one year of age on ill-health (β). Breakdown by gender (M,F) and educational attainment[ISCED])

	β	β's Male[a]			β's Female[a]			Male, H0:β=0			Female, H0:β=0		
	country level[a]	<ISCED3	ISCED3[b]	>ISCED3	<ISCED3	ISCED3	>ISCED3	<ISCED3 [p-value]	ISCED3 [p-value]	>ISCED3 [p-value]	<ISCED3 [p-value]	ISCED3 [p-value]	>ISCED3 [p-value]
AUT	0.05	0.06	0.05	0.05	0.07	0.05	0.05	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
BEL	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CHE	0.03	0.03	0.04	0.03	0.02	0.03	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CZE	0.03	0.04	0.05	0.04	0.02	0.03	0.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
DEU	0.04	0.05	0.05	0.05	0.06	0.04	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
DNK	0.04	0.04	0.04	0.04	0.05	0.03	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ESP	0.04	0.04	0.03	0.03	0.04	0.03	0.03	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
EST	0.04	0.04	0.04	0.05	0.03	0.03	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FRA	0.04	0.05	0.04	0.04	0.04	0.03	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
GRC	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
HRV	0.06	0.04	0.07	0.17	0.03	0.03	0.13	0.0168	0.0195	0.0000	0.0334	0.2397	0.0000
HUN	0.03	0.03	0.03	0.04	0.03	0.03	0.02	0.5579	0.8046	0.0098	0.0011	0.1258	0.1036
ISR	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.0000	0.0154	0.0594	0.0001	0.3185	0.0845
ITA	0.03	0.04	0.04	0.05	0.03	0.02	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LUX	0.03	0.03	0.04	0.05	0.03	0.05	0.02	0.5488	0.0033	0.0010	0.0071	0.0001	0.1954
NLD	0.03	0.04	0.04	0.03	0.04	0.04	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
POL	0.03	0.03	0.04	0.04	0.03	0.02	0.04	0.0000	0.0000	0.0001	0.0000	0.0000	0.0002
PRT	0.06	0.05	0.12	0.05	0.06	0.03	0.06	0.0000	0.0000	0.0069	0.0000	0.1230	0.0011
SVN	0.04	0.07	0.04	0.04	0.04	0.02	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
SWE	0.04	0.05	0.04	0.04	0.03	0.03	0.03	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Source: SHARE 2004-2017
[a]:Estimated using "within" respondent variation of ill-health across waves (ie. Fixed Effect estimation) around the country-specific retirement age
[b]: ISCED3=upper secondary degree [International Standard Classification of Education]

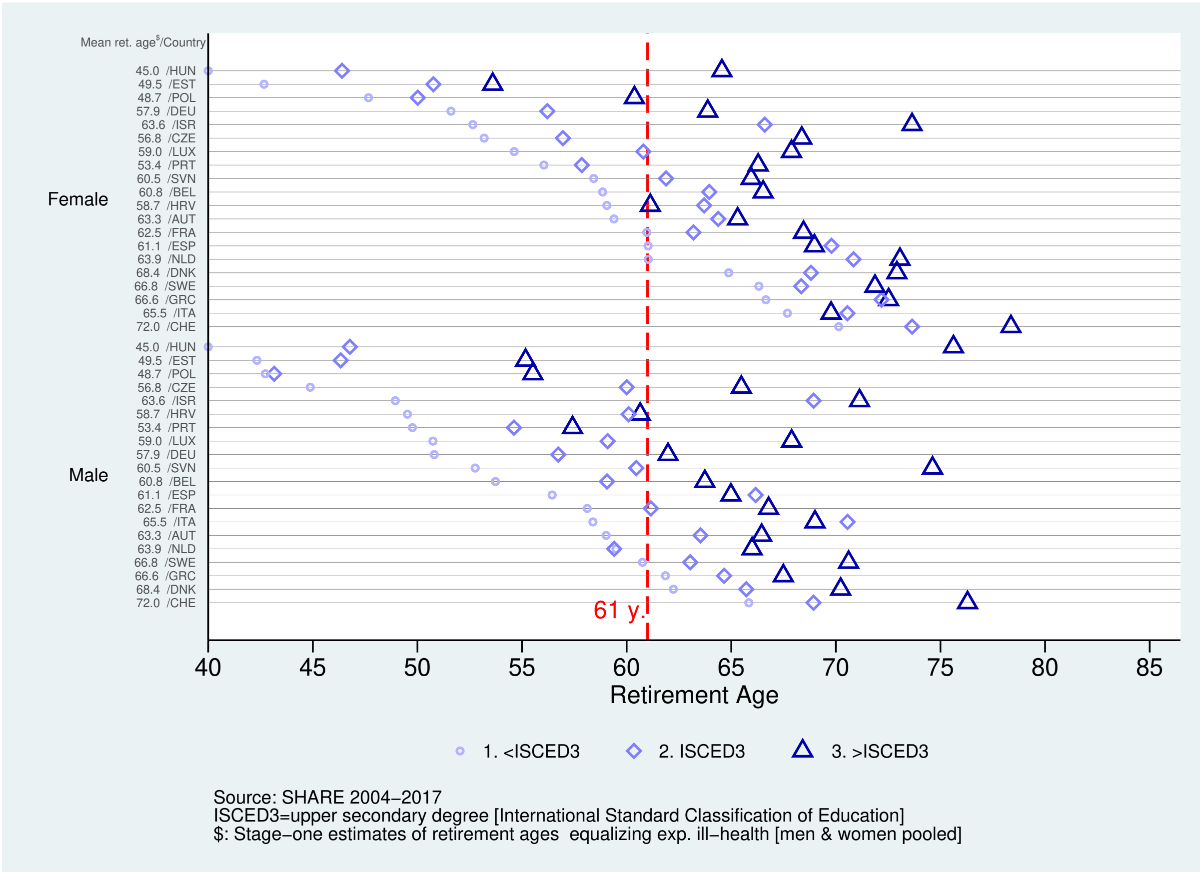

Figure 5: Differentiated retirement ages equalising (expected) ill-health, across and within countries [**Ref. age 61**]

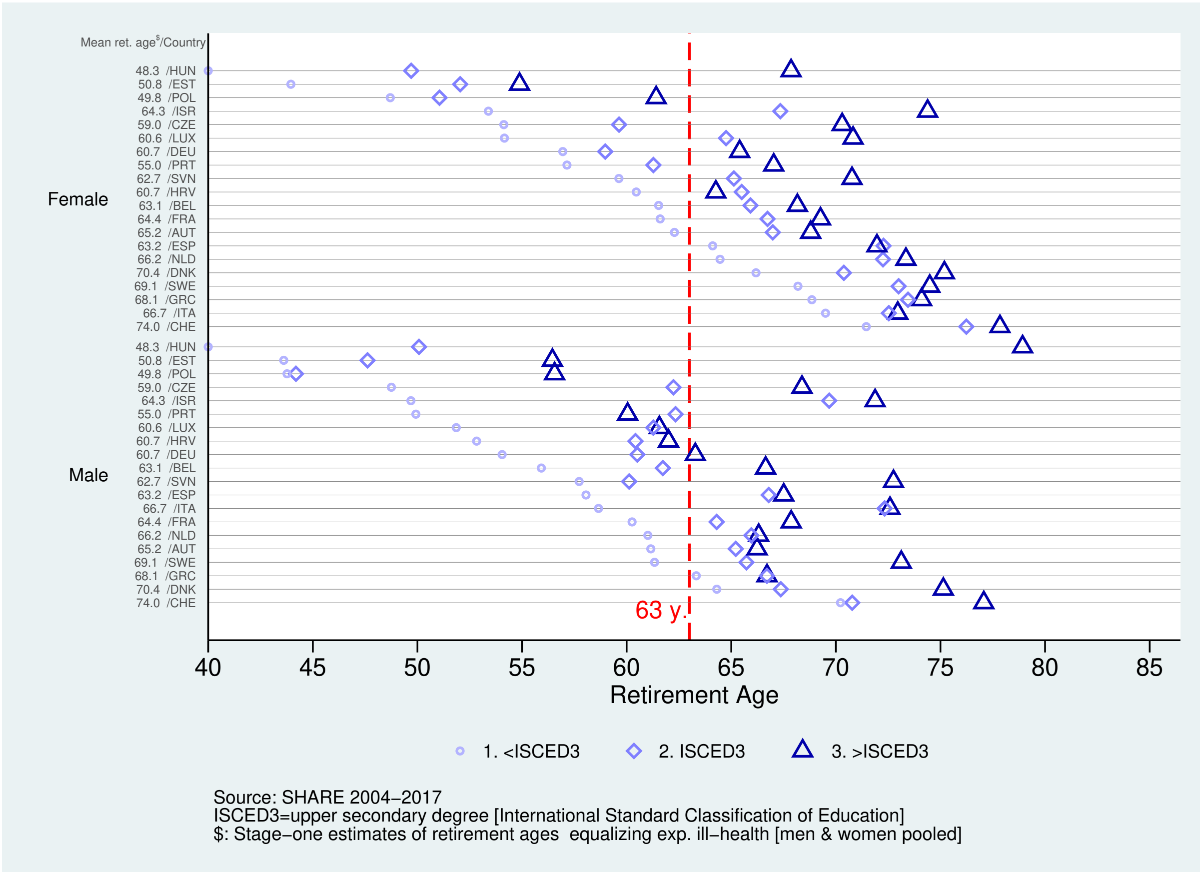

Figure 6: Differentiated retirement ages equalising (expected) ill-health, across and within countries [**Ref. age 63**]

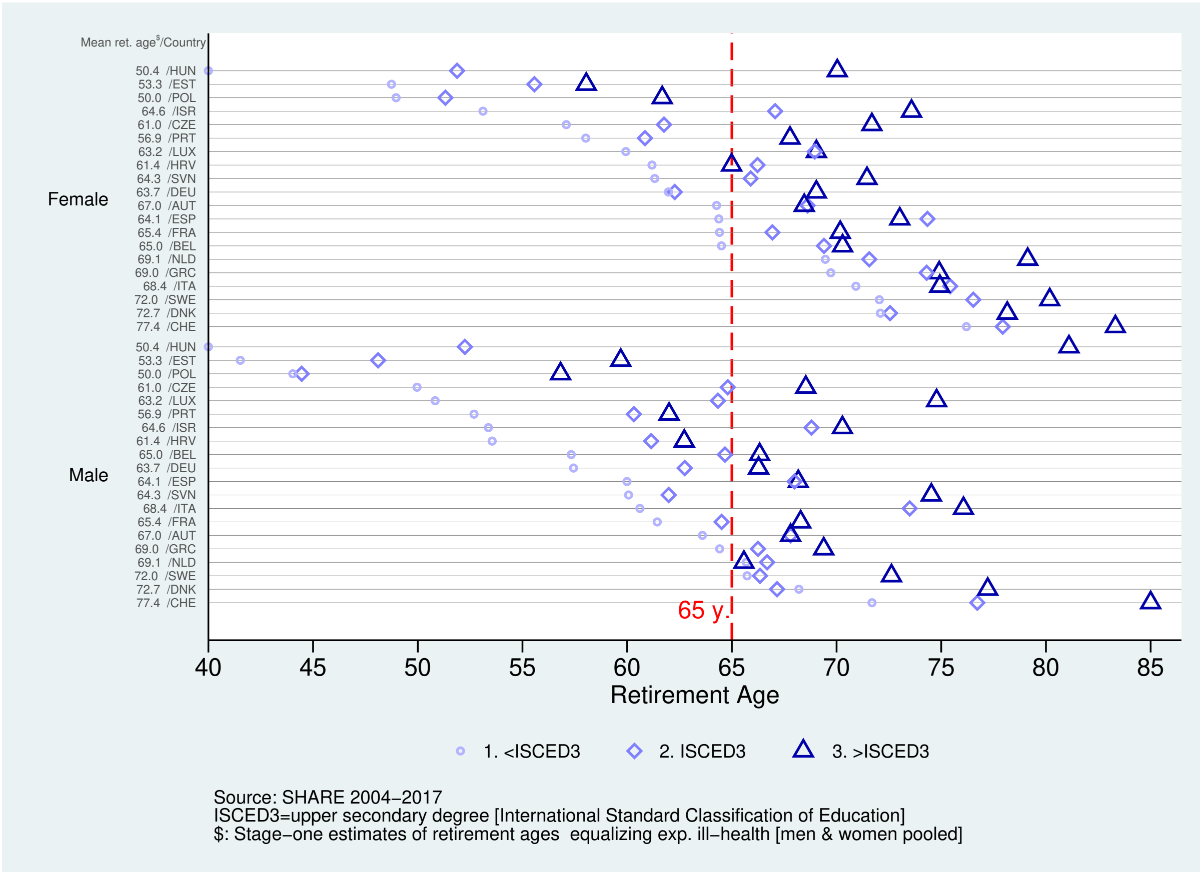

Figure 7: Differentiated retirement ages equalising (expected) ill-health, across and within countries [**Ref. age 65**]

Table 11: Differentiated retirement age equalising ill-health. Between- and within-country differentiation [**ref.age 61**]

	Diff. ret.	Gap to int. ref.(61)	Diff. ret.F	Diff. ret. M	Education >ISCED3	<ISCED3	ISCED3	F-M gap	ISCED Gap	ret. max	ret. min	max-min
AUT	63.29	2.29	63.00	63.03	59.21	63.95	65.88	-0.03	-6.67	66.45	59.02	7.43
BEL	60.79	-0.21	58.84	63.11	56.29	61.51	65.13	-4.27	-8.84	66.52	53.73	12.79
CHE	72.02	11.02	70.35	74.05	67.99	71.29	77.33	-3.70	-9.34	78.37	65.84	12.53
CZE	56.76	-4.24	56.79	59.50	49.03	58.48	66.93	-2.72	-17.89	68.37	44.88	23.49
DEU	57.89	-3.11	56.50	57.23	51.20	56.47	62.93	-0.73	-11.72	63.88	50.80	13.07
DNK	68.41	7.41	66.06	68.87	63.56	67.27	71.57	-2.81	-8.02	72.92	62.23	10.68
ESP	61.11	0.11	62.53	66.60	58.73	67.98	66.98	-4.07	-8.25	69.79	56.44	13.35
EST	49.48	-11.52	47.94	49.01	42.50	48.55	54.38	-1.07	-11.89	55.17	42.33	12.84
FRA	62.52	1.52	62.02	64.20	59.54	62.18	67.62	-2.18	-8.08	68.46	58.11	10.34
GRC	66.62	5.62	64.67	70.45	64.25	68.42	72.52	-5.78	-5.75	72.52	61.85	10.67
HRV	58.71	-2.29	56.75	61.30	54.29	61.90	60.89	-4.54	-6.60	63.70	49.52	14.18
HUN	44.96	-16.04	54.13	50.32	40.00	46.58	70.09	3.81	-30.09	75.62	40.00	35.62
ISR	63.56	2.56	63.00	64.30	50.80	67.77	72.39	-1.29	-21.59	73.64	48.94	24.70
ITA	65.49	4.49	65.98	69.34	63.04	70.55	69.39	-3.35	-6.35	70.56	58.39	12.17
LUX	59.02	-1.98	59.24	61.10	52.68	59.94	67.88	-1.86	-15.20	67.89	50.74	17.15
NLD	63.89	2.89	61.63	68.31	60.26	65.13	69.53	-6.68	-9.27	73.06	59.41	13.66
POL	48.73	-12.27	47.13	52.68	45.20	46.59	57.94	-5.55	-12.75	60.37	42.73	17.64
PRT	53.40	-7.60	53.93	60.06	52.90	56.23	61.85	-6.13	-8.95	66.29	49.76	16.53
SVN	60.47	-0.53	62.61	62.09	55.59	61.17	70.28	0.53	-14.69	74.62	52.76	21.86
SWE	66.80	5.80	64.80	68.84	63.54	65.69	71.24	-4.04	-7.70	71.87	60.76	11.11
Int. ref.	61											

Source: SHARE 2004-2017

[a]: ISCED3=upper secondary degree [International Standard Classification of Education]"

Table 12: Differentiated retirement age equalising ill-health. Between- and within-country differentiation [**ref.age 63**]

	Diff. ret.	Gap to int. ref.(63)	Diff. ret.F	Diff. ret. M	Education >ISCED3	<ISCED3	ISCED3	F-M gap	ISCED Gap	ret. max	ret. min	max-min
AUT	65.21	2.21	64.20	66.02	61.72	66.10	67.52	-1.82	-5.80	68.80	61.15	7.64
BEL	63.07	0.07	61.43	65.20	58.73	63.82	67.40	-3.77	-8.68	68.16	55.92	12.24
CHE	73.96	10.96	72.69	75.18	70.84	73.51	77.46	-2.49	-6.62	77.84	70.22	7.62
CZE	59.00	-4.00	59.79	61.36	51.44	60.94	69.34	-1.57	-17.90	70.30	48.75	21.55
DEU	60.72	-2.28	59.28	60.44	55.50	59.74	64.34	-1.16	-8.84	65.40	54.05	11.35
DNK	70.41	7.41	68.94	70.58	65.25	68.87	75.16	-1.65	-9.92	75.19	64.31	10.88
ESP	63.15	0.15	64.12	69.45	61.08	69.53	69.74	-5.33	-8.65	72.28	58.06	14.22
EST	50.76	-12.24	49.23	50.29	43.78	49.83	55.67	-1.07	-11.89	56.45	43.61	12.84
FRA	64.44	1.44	64.14	65.87	60.93	65.52	68.57	-1.73	-7.63	69.27	60.26	9.01
GRC	68.09	5.09	65.58	72.13	66.09	70.08	70.40	-6.55	-4.31	74.10	63.33	10.77
HRV	60.69	-2.31	58.42	63.41	56.64	62.96	63.13	-4.99	-6.49	65.50	52.83	12.67
HUN	48.27	-14.73	56.33	52.52	40.00	49.89	73.39	3.81	-33.39	78.92	40.00	38.92
ISR	64.30	1.30	63.75	65.04	51.54	68.51	73.13	-1.29	-21.59	74.39	49.69	24.70
ITA	66.74	3.74	67.86	71.67	64.08	72.43	72.77	-3.81	-8.69	72.96	58.66	14.30
LUX	60.64	-2.36	58.23	63.24	53.01	63.01	66.19	-5.01	-13.19	70.82	51.85	18.97
NLD	66.16	3.16	64.43	70.02	62.74	69.11	69.83	-5.59	-7.09	73.35	61.01	12.33
POL	49.77	-13.23	48.17	53.72	46.23	47.62	58.98	-5.55	-12.75	61.41	43.77	17.64
PRT	54.95	-8.05	57.44	61.82	53.54	61.81	63.54	-4.38	-1-	67.03	49.93	17.11
SVN	62.71	-0.29	63.53	65.18	58.68	62.62	71.76	-1.64	-13.08	72.75	57.73	15.02
SWE	69.07	6.07	66.73	71.89	64.76	69.36	73.81	-5.16	-9.05	74.49	61.33	13.15
Int. ref.	63											

Source: SHARE 2004-2017

[a]: ISCED3=upper secondary degree [International Standard Classification of Education]"

Table 13: Differentiated retirement age equalising ill-health. Between- and within-country differentiation [**ref.age 63**]

	Diff. ret.	Gap to int. ref.(65)	Diff. ret.F	Diff. ret. M	Education >ISCED3	<ISCED3	ISCED3	F-M gap	ISCED Gap	ret. max	ret. min	max-min
AUT	67.01	2.01	66.40	67.11	63.93	68.21	68.13	-0.71	-4.20	68.62	63.59	5.02
BEL	65.02	0.02	62.77	68.06	60.92	67.03	68.31	-5.29	-7.39	70.29	57.33	12.96
CHE	77.45	12.45	77.81	79.15	73.95	77.33	84.16	-1.35	-10.21	85.00	71.69	13.31
CZE	61.01	-3.99	61.10	63.51	53.53	63.28	70.11	-2.41	-16.58	71.69	49.97	21.72
DEU	63.73	-1.27	62.15	64.42	59.70	62.51	67.66	-2.27	-7.95	69.03	57.44	11.60
DNK	72.68	7.68	70.86	74.27	70.15	69.86	77.69	-3.41	-7.54	78.15	67.16	10.99
ESP	64.12	-0.88	65.38	70.58	62.18	71.17	70.59	-5.19	-8.41	74.34	59.99	14.35
EST	53.30	-11.70	49.77	54.12	45.13	51.84	58.87	-4.35	-13.74	59.69	41.52	18.17
FRA	65.45	0.45	64.74	67.17	62.92	65.72	69.23	-2.43	-6.31	70.17	61.44	8.74
GRC	68.99	3.99	66.68	72.98	67.07	70.27	72.14	-6.29	-5.07	74.90	64.42	10.48
HRV	61.41	-3.59	59.14	64.13	57.37	63.68	63.86	-4.99	-6.49	66.22	53.55	12.67
HUN	50.44	-14.56	57.78	53.97	40.00	52.06	75.57	3.81	-35.57	81.10	40.00	41.10
ISR	64.61	-0.39	64.15	64.59	53.24	67.93	71.93	-0.44	-18.69	73.58	53.11	20.47
ITA	68.42	3.42	70.05	73.76	65.77	74.46	75.50	-3.71	-9.73	76.06	60.61	15.45
LUX	63.25	-1.75	63.31	65.98	55.38	66.65	71.91	-2.66	-16.52	74.78	50.83	23.95
NLD	69.14	4.14	65.98	73.38	67.57	69.12	72.35	-7.40	-4.78	79.13	65.58	13.55
POL	50.03	-14.97	48.44	53.99	46.50	47.89	59.25	-5.55	-12.75	61.67	44.03	17.64
PRT	56.90	-8.10	58.34	62.22	55.35	60.58	64.89	-3.88	-9.54	67.78	52.69	15.09
SVN	64.31	-0.69	65.52	66.22	60.69	63.94	72.99	-0.70	-12.30	74.53	60.07	14.46
SWE	71.98	6.98	68.23	76.25	68.89	71.44	76.40	-8.02	-7.52	80.18	65.73	14.45
Int. ref.	65											

Source: SHARE 2004-2017

[a]: ISCED3=upper secondary degree [International Standard Classification of Education]”

Table 14: Mental health: individuals aged 50-59. Country averages

	Depression[a]	Pessimism[a]	Suicidality[a]	Guilt[a]	Sleep[a] (lack of)	Interest[a] (lack of)	Irritability[a]	Appetite[a] (lack of)	Fatigue[a]	Concentration[a] (lack of)	Enjoyment[a] (lack of)	Tearfulness[a]	Mental ill health index[b]
AUT	0.34	0.08	0.04	0.06	0.30	0.04	0.21	0.06	0.24	0.11	0.15	0.21	-0.26
BEL	0.39	0.12	0.09	0.09	0.35	0.07	0.28	0.09	0.34	0.19	0.08	0.31	-0.01
CHE	0.39	0.07	0.04	0.05	0.29	0.04	0.27	0.05	0.27	0.11	0.05	0.21	-0.26
CZE	0.38	0.16	0.08	0.07	0.35	0.06	0.24	0.07	0.31	0.12	0.05	0.20	-0.15
DEU	0.43	0.06	0.05	0.05	0.36	0.05	0.28	0.05	0.29	0.13	0.10	0.22	-0.16
DNK	0.30	0.04	0.03	0.10	0.30	0.05	0.22	0.05	0.31	0.10	0.06	0.16	-0.31
ESP	0.34	0.21	0.07	0.05	0.30	0.13	0.23	0.08	0.36	0.19	0.11	0.26	-0.04
EST	0.48	0.25	0.06	0.15	0.46	0.09	0.39	0.07	0.50	0.11	0.12	0.22	0.17
FRA	0.46	0.19	0.12	0.11	0.38	0.07	0.35	0.08	0.36	0.20	0.10	0.25	0.11
GRC	0.29	0.18	0.04	0.06	0.21	0.13	0.22	0.08	0.26	0.18	0.14	0.24	-0.17
HRV	0.41	0.18	0.07	0.06	0.34	0.09	0.34	0.08	0.39	0.16	0.09	0.25	-
HUN	0.40	0.23	0.12	0.13	0.38	0.11	0.36	0.11	0.47	0.19	0.15	0.30	0.23
ISR	0.31	0.15	0.05	0.09	0.32	0.11	0.29	0.09	0.28	0.18	0.11	0.25	-0.08
ITA	0.37	0.16	0.04	0.09	0.29	0.12	0.42	0.08	0.33	0.24	0.19	0.23	0.05
LUX	0.44	0.10	0.07	0.11	0.35	0.06	0.33	0.08	0.32	0.16	0.11	0.24	-0.03
NLD	0.30	0.06	0.04	0.08	0.26	0.06	0.15	0.05	0.27	0.18	0.09	0.28	-0.26
POL	0.53	0.35	0.10	0.11	0.44	0.11	0.41	0.10	0.41	0.19	0.25	0.23	0.32
PRT	0.52	0.45	0.10	0.07	0.43	0.11	0.34	0.12	0.31	0.27	0.22	0.36	0.35
SVN	0.37	0.26	0.05	0.08	0.36	0.06	0.29	0.06	0.28	0.11	0.08	0.17	-0.13
SWE	0.31	0.05	0.03	0.07	0.30	0.06	0.20	0.06	0.32	0.12	0.11	0.22	-0.25

Source: SHARE 2004-2017

[a]: No(0), yes(1)

[b]: First principal component of all items (the higher, the worse is people' s health). Principal component analysis is carried with all countries pooled. Displayed values correspond to the predicted score values divided by standard deviation.

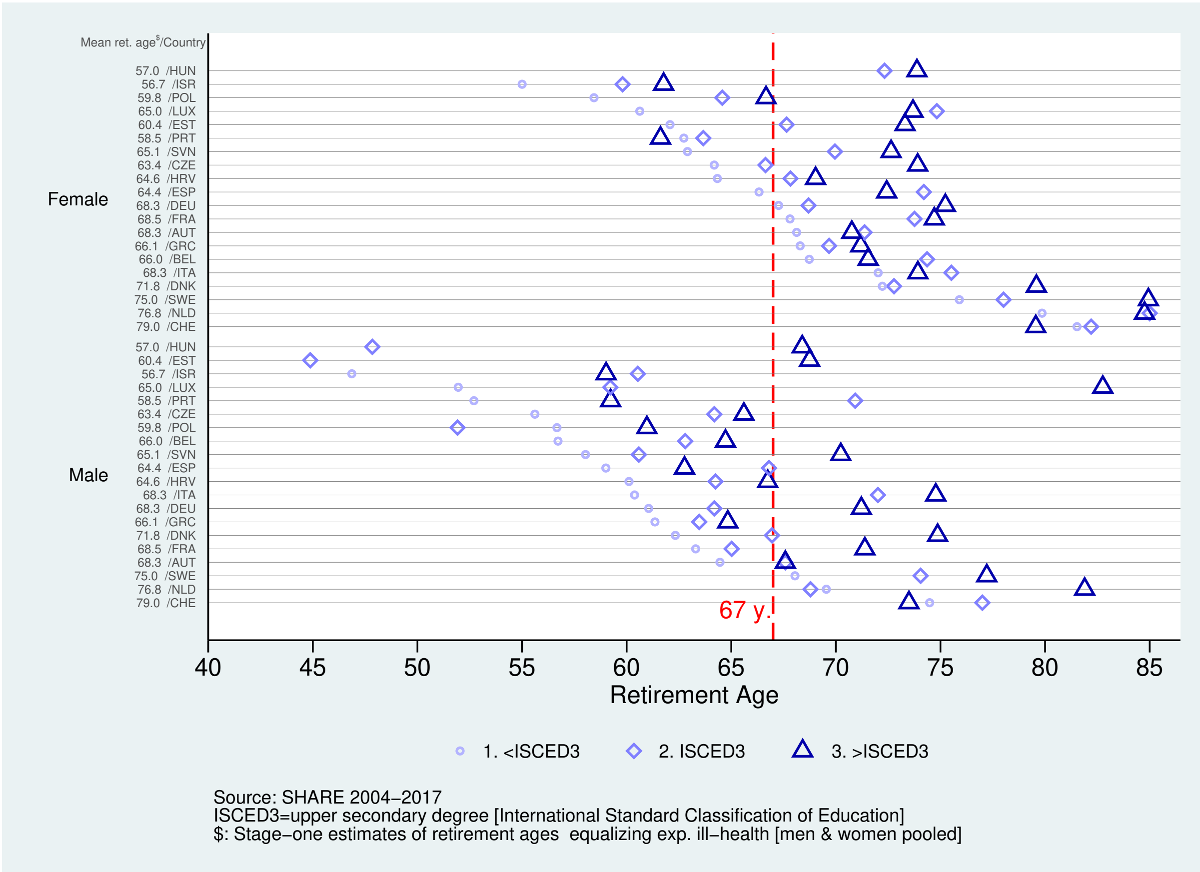

Figure 8: Differentiated retirement ages equalising (expected) ill-health, across and within countries [**Objective physical health**]

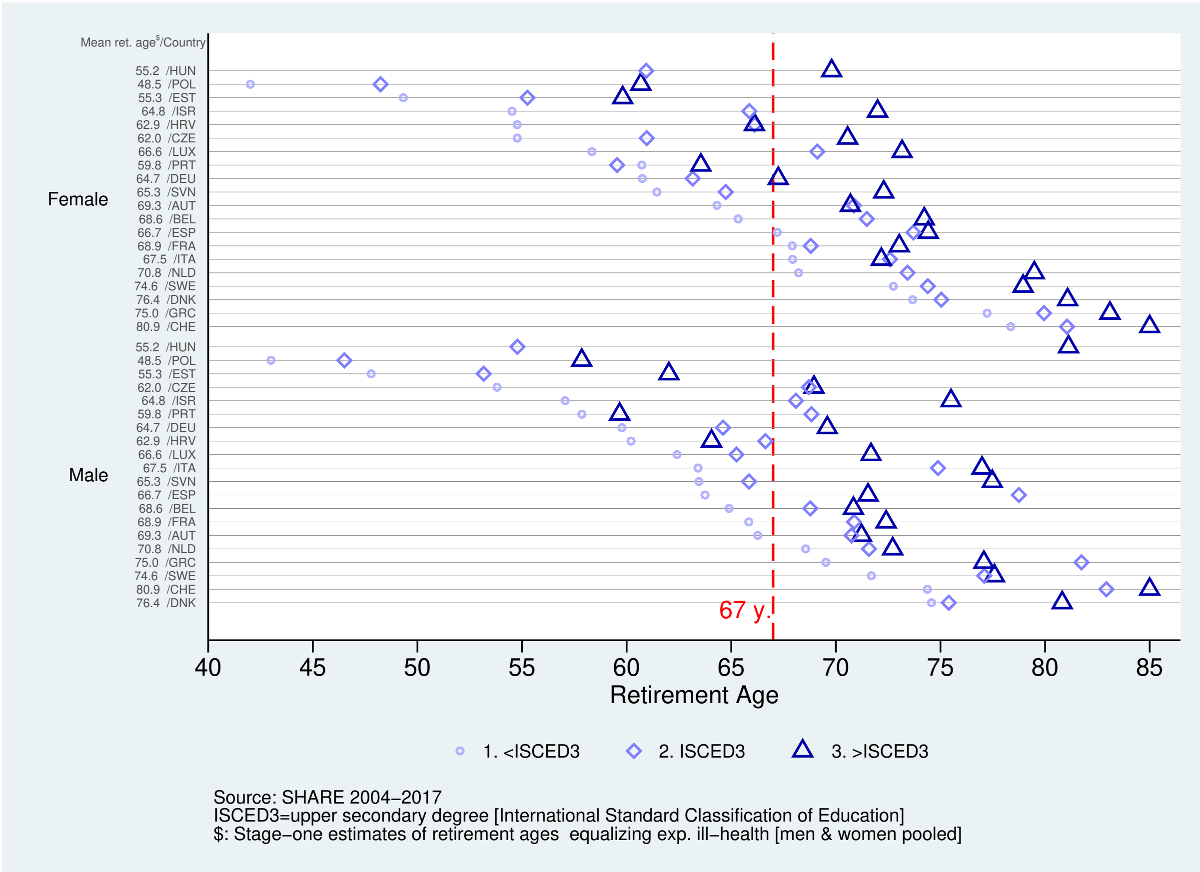

Figure 9: Differentiated retirement ages equalising (expected) ill-health, across and within countries [**Subjective physical health**]

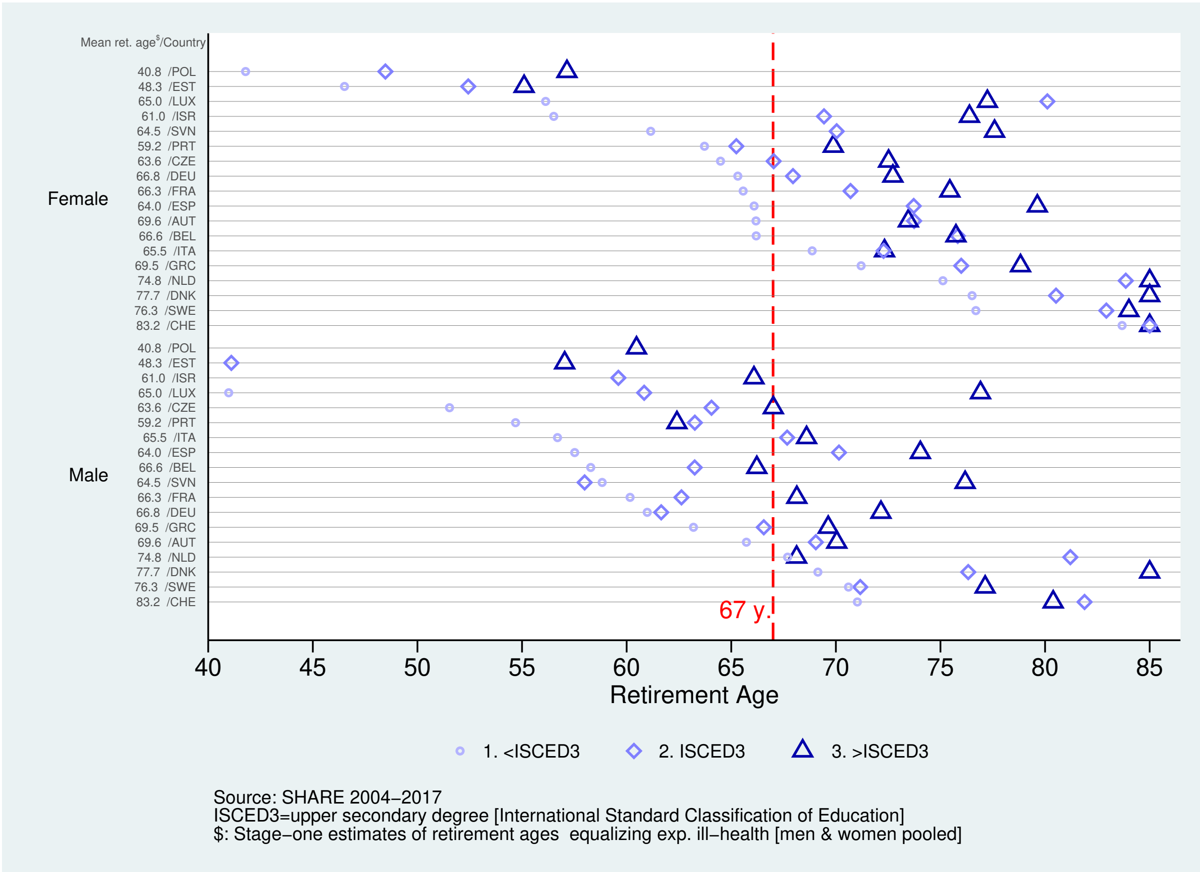

Figure 10: Differentiated retirement ages equalising (expected) ill-health, across and within countries [**Physical+ mental health**]

Table 15: Differentiated retirement age equalising ill-health. Between- and within-country differentiation [**Objective physical health**]

	Diff. ret.	Gap to int. ref.(67)	Diff. ret.F	Diff. ret. M	Education >ISCED3	<ISCED3	ISCED3	F-M gap	ISCED Gap	ret. max	ret. min	max-min
AUT	68.30	1.30	66.54	70.09	66.29	69.48	69.17	-3.54	-2.88	71.37	64.46	6.91
BEL	66.02	-0.98	61.41	71.54	62.72	68.58	68.13	-10.13	-5.41	74.36	56.72	17.64
CHE	78.95	11.95	74.99	81.09	78.00	79.60	76.52	-6.10	1.48	82.20	73.49	8.71
CZE	63.43	-3.57	61.80	68.24	59.90	65.41	69.76	-6.44	-9.86	73.91	55.61	18.30
DEU	68.29	1.29	65.49	70.40	64.16	66.44	73.23	-4.91	-9.07	75.23	61.05	14.18
DNK	71.83	4.83	68.05	74.86	67.27	69.86	77.22	-6.81	-9.95	79.58	62.33	17.26
ESP	64.41	-2.59	62.86	70.99	62.67	70.51	67.60	-8.13	-4.93	74.20	59.01	15.20
EST	60.38	-6.62	51.21	67.68	51.04	56.26	71.03	-16.47	-19.99	73.31	40.00	33.31
FRA	68.49	1.49	66.57	72.09	65.55	69.39	73.05	-5.52	-7.49	74.71	63.30	11.41
GRC	66.06	-0.94	63.22	69.72	64.82	66.57	68.01	-6.50	-3.19	71.19	61.35	9.84
HRV	64.61	-2.39	63.70	67.07	62.22	66.04	67.89	-3.37	-5.66	69.03	60.11	8.92
HUN	57.01	-9.99	52.08	62.07	40.00	60.09	71.13	-9.99	-31.13	73.87	40.00	33.87
ISR	56.69	-10.31	55.47	58.86	50.93	60.17	60.39	-3.39	-9.46	61.77	46.86	14.90
ITA	68.32	1.32	69.05	73.82	66.20	73.77	74.35	-4.77	-8.15	75.52	60.38	15.14
LUX	65.00	-2.00	64.64	69.71	56.29	67.02	78.22	-5.07	-21.93	82.76	51.95	30.81
NLD	76.79	9.79	73.41	83.20	74.70	76.89	83.32	-9.80	-8.62	85.00	68.79	16.21
POL	59.78	-7.22	56.52	63.22	57.55	58.24	63.81	-6.71	-6.26	66.66	51.92	14.74
PRT	58.53	-8.47	60.95	62.67	57.72	67.29	60.43	-1.72	-2.71	70.92	52.70	18.22
SVN	65.06	-1.94	62.95	68.50	60.47	65.27	71.44	-5.55	-10.97	72.64	58.03	14.60
SWE	74.98	7.98	73.10	79.62	71.97	76.03	81.08	-6.52	-9.10	84.94	68.04	16.89
Int. ref.	67											

Source: SHARE 2004-2017

[a]: ISCED3=upper secondary degree [International Standard Classification of Education]"

Table 16: Differentiated retirement age equalising ill-health. Between- and within-country differentiation [**Subjective physical health**]

	Diff.	Gap to	Diff.	Diff.		Education		F-M	ISCED			
	ret.	int. ref.(67)	ret.F	ret. M	>ISCED3	<ISCED3	ISCED3	gap	Gap	ret. max	ret. min	max-min
AUT	69.28	2.28	69.41	68.63	65.29	70.80	70.96	0.79	-5.67	71.22	64.32	6.90
BEL	68.58	1.58	68.17	70.34	65.11	70.13	72.53	-2.17	-7.42	74.22	64.90	9.32
CHE	80.95	13.95	80.77	81.47	76.37	81.99	85.00	-0.70	-8.63	85.00	74.38	10.62
CZE	62.02	-4.98	63.82	62.10	54.29	64.84	69.76	1.73	-15.47	70.56	53.81	16.76
DEU	64.75	-2.25	64.66	63.72	60.26	63.88	68.42	0.94	-8.16	69.59	59.77	9.82
DNK	76.37	9.37	76.93	76.60	74.12	75.22	80.95	0.33	-6.82	81.08	73.67	7.40
ESP	66.74	-0.26	71.34	71.77	65.47	76.23	72.98	-0.43	-7.51	78.75	63.75	15.00
EST	55.32	-11.68	54.33	54.80	48.56	54.21	60.92	-0.47	-12.36	62.02	47.79	14.23
FRA	68.88	1.88	69.70	69.92	66.88	69.84	72.72	-0.21	-5.84	73.03	65.84	7.19
GRC	74.96	7.96	76.11	80.09	73.38	80.84	80.09	-3.98	-6.71	83.10	69.52	13.58
HRV	62.89	-4.11	63.63	62.33	57.49	66.37	65.08	1.30	-7.59	66.63	54.77	11.86
HUN	55.15	-11.85	58.63	56.91	40.00	57.86	75.46	1.72	-35.46	81.12	40.00	41.12
ISR	64.83	-2.17	66.88	64.13	55.79	66.98	73.75	2.76	-17.96	75.51	54.52	20.98
ITA	67.53	0.53	71.76	70.90	65.68	73.74	74.58	0.86	-8.90	76.99	63.41	13.57
LUX	66.59	-0.41	66.45	66.87	60.37	67.18	72.42	-0.43	-12.05	73.17	58.34	14.83
NLD	70.82	3.82	70.95	73.71	68.39	72.51	76.10	-2.76	-7.71	79.48	68.22	11.26
POL	48.53	-18.47	49.12	50.31	42.51	47.37	59.27	-1.19	-16.76	60.68	42.01	18.67
PRT	59.81	-7.19	62.12	61.27	59.29	64.19	61.61	0.85	-2.31	68.83	57.86	10.97
SVN	65.34	-1.66	68.93	66.16	62.45	65.29	74.88	2.77	-12.43	77.48	61.45	16.03
SWE	74.57	7.57	75.46	75.36	72.22	75.74	78.26	0.09	-6.04	78.95	71.70	7.25
Int. ref.	67											

Source: SHARE 2004-2017

[a]: ISCED3=upper secondary degree [International Standard Classification of Education]"

Table 17: Differentiated retirement age equalising ill-health. Between- and within-country differentiation [**Physical + mental health**]

	Diff. ret.	Gap to int. ref.(67)	Diff. ret.F	Diff. ret. M	Education >ISCED3	<ISCED3	ISCED3	F-M gap	ISCED Gap	ret. max	ret. min	max-min
AUT	69.62	2.62	68.27	71.13	65.95	71.39	71.75	-2.86	-5.80	73.74	65.72	8.02
BEL	66.65	-0.35	62.58	72.59	62.24	69.54	70.98	-10	-8.74	75.82	58.28	17.54
CHE	83.22	16.22	77.77	84.56	77.36	83.44	82.69	-6.79	-5.34	85.00	71.03	13.97
CZE	63.60	-3.40	60.87	68.01	58.01	65.54	69.76	-7.14	-11.75	72.52	51.53	20.99
DEU	66.84	-0.16	64.93	68.66	63.15	64.80	72.44	-3.73	-9.29	72.72	60.98	11.74
DNK	77.73	10.73	76.82	80.68	72.83	78.42	85.00	-3.86	-12.17	85.00	69.14	15.86
ESP	63.97	-3.03	67.23	73.15	61.80	71.93	76.83	-5.91	-15.03	79.63	57.52	22.11
EST	48.27	-18.73	46.05	51.35	43.26	46.77	56.07	-5.30	-12.81	57.04	40.00	17.04
FRA	66.34	-0.66	63.64	70.57	62.87	66.66	71.79	-6.93	-8.92	75.45	60.16	15.28
GRC	69.53	2.53	66.46	75.34	67.20	71.27	74.23	-8.88	-7.03	78.83	63.19	15.63
ISR	60.96	-6.04	55.23	67.45	48.26	64.52	71.24	-12.22	-22.98	76.39	40.00	36.39
ITA	65.48	-1.52	64.32	71.16	62.78	69.98	70.46	-6.84	-7.68	72.33	56.70	15.63
LUX	64.97	-2.03	59.58	71.16	48.55	70.47	77.08	-11.58	-28.52	80.11	40.98	39.13
NLD	74.80	7.80	72.34	81.32	71.40	82.53	76.56	-8.98	-5.16	85.00	67.69	17.31
POL	40.84	-26.16	46.82	49.13	40.89	44.23	58.81	-2.31	-17.92	60.47	40.00	20.47
PRT	59.20	-7.80	60.12	66.28	59.21	64.25	66.14	-6.16	-6.93	69.88	54.69	15.19
SVN	64.49	-2.51	64.33	69.59	59.99	64.02	76.88	-5.26	-16.89	77.59	57.99	19.59
SWE	76.26	9.26	72.97	81.21	73.65	77.05	80.57	-8.24	-6.92	84.01	70.60	13.40
Int. ref.	67											

Source: SHARE 2004-2017

[a]: ISCED3=upper secondary degree [International Standard Classification of Education]"