

Health Inequalities among Retirees in the Netherlands

International Social Security project, Phase 12

Adriaan Kalwij (Utrecht University) and Arie Kapteyn (University of Southern California)

ABSTRACT

In the Netherlands, life expectancy has continued to rise over the last two decades and the distribution of the age of death has narrowed, which suggests a decrease in health inequality. For the same period, however, the income-mortality gradient has increased, which suggests that the health gains have been unequally distributed across the income distribution. We examine the latter suggestion using data for the Netherlands of the longitudinal Survey of Health, Ageing and Retirement in Europe. Our empirical findings show no significant changes in income-based physical and mental health inequalities during the last two decades. Arguably, larger samples, such as administrative data which is often used to analyze the income-mortality gradient, are needed to investigate in more detail the evolution of physical and mental health inequalities before drawing firm conclusions.

Keywords: Health inequality, income, mortality.

J.E.L. codes: I00, I14.

1. INTRODUCTION

Life expectancy in the Netherlands has continued to rise between 2000 and 2020 from about 78 in 2000 to 81 in 2020 (Figure 1's note). Also, the distribution of the age of death has narrowed during this period (Figure 1), which suggests a decrease in health inequality. For the same period, however, the income-mortality gradient has increased (Muns, Knoef and van Soest, 2018; Table A.1), which suggests that the health gains during this period have been unequally distributed across the income distribution. Obtaining insights into the unequal distribution of health gains and which health domains it concerns is important for public health policy (RVS, 2021).

< Figure 1 >

Therefore, we empirically analyze the evolution of income-based physical and mental health inequalities among retirees over the last two decades in the Netherlands.

The literature has identified significant socioeconomic inequalities in health and mortality for many populations and time periods (Dow and Rehkopf, 2010; Huisman et al., 2004; Hurd et al., 1999; van Kippersluis et al., 2009; Kunst et al., 2004; Mackenbach et al., 2016, Marmot et al., 1991; Menchik, 1993), and also for the Netherlands (Hurd and Kapteyn, 2003; Kalwij, 2014; Kalwij, Alessie, and Knoef, 2013; Kalwij, Kapteyn, de Vos, 2016; Kippersluis et al., 2010; Mackenbach, 1992; Muns, Knoef and van Soest, 2018). Possible reasons for socioeconomic inequalities in health and mortality include behavioral health risk factors such as smoking and obesity that vary across educational groups and psychological stress related to, e.g., a lack of autonomy at work (Cutler et al., 2011; Kutlu Koc and Kalwij, 2017; Lipowicz, Szklarska, Mitas, 2016; Lunau et al., 2015; Siegrist and Marmot, 2004).

While socioeconomic inequalities in health and mortality can be persistent, they are not carved in stone and can vary over time. For the Netherlands, e.g., Kalwij (2019) shows a steepening of the socioeconomic status (SES)-mortality gradient during the twentieth century for individuals born between 1852 and 1947. This finding can be reconciled with the previous findings that mortality was relatively high among lower social classes around 1900 (Van Reek, 1993), that during the period 1820-1920 mortality differences between socioeconomic groups decreased over time (Van Poppel, Jennissen, Mandemakers, 2009), and that by around 1950 the SES-mortality gradient was no longer present, yet to resurface around 1960 (Van Reek, 1993). Further, while the strengthening of the Dutch welfare state after World War II, e.g., in introducing universal health care and state pensions, can have mitigated the SES-health gradient (Hurd and Kapteyn, 2003), it has not prevented a steepening of the SES-mortality gradient (Mackenbach, 1992; Muns, Knoef and van Soest, 2018; Table A.1). Finally, Figures 2 and 3 show relatively strong declines in male and female mortality rates around or just-below median income (see also Table A.1). Hence, the rise in inequality since 2011 stems from the relatively strong health gains for these latter groups who, therefore, have reduced their health-gap with the high-income groups and have widened it with the low-income groups.

< Figures 2 and 3 >

The rest of the chapter is structured as follows. Section 2 introduces the data and Section 3 presents the evolution of health inequalities by household income deciles. Section 3 also examines the evolution of health inequalities by level of education and gender. Section 4 briefly concludes.

2. THE DATA

The empirical analysis uses data for the Netherlands of the longitudinal Survey of Health, Ageing and Retirement in Europe (SHARE). SHARE is a large longitudinal study on the life of people aged 50 years and older in Europe (<https://share-eric.eu/>). The survey covers key areas of the respondents' life such as health, socioeconomic status, and social and family networks (Börsch-Supan et al., 2013, 2015). Nine waves of data are available, spanning the period 2004-2022. Further, Kalwij (2010) analyzed the determinants of unit non-response for Wave 1 of SHARE Netherlands and Bergmann et al. (2019) provides information on SHARE response and retention rates. Finally, SHARE is a harmonized survey with face-to-face interviews for data gathering (Malter and Börsch-Supan, 2015). The Netherlands, however, participated with biennial face-to-face interviews in Waves 1-5 (2004-2013) and Waves 8-9 (2019/20 and 2021/22), and gathered data for Wave 6 (2015/16) using a mixed-mode survey and for Wave 7 (2017/18) using a self-administered web survey (Das et al., 2017). The mixed-mode survey for Wave 6 consisted of first offering a self-administered web survey and next a telephone survey for those who did not complete the survey online. About 7% of Wave 6's observations are from the telephone survey. Possible mode effects are discussed in de Bruijne and Kalwij (2024).

2.1 *Definitions of variables*

Age is measured in years and based on the years and months of interview and birth. Respondents are defined as a retiree if their self-assessed labor market status is retirement (SHARE item ep005) or if they received a state pension (AOW in Dutch). The latter in particular affects female respondents who often reported to be a homemaker while receiving a state pension. Residents of the Netherlands receive a state pension from their state pension age

onwards, which increased from 65 years in 2004 to 66 years and seven months in 2022. Kalwij and Kapteyn (2026) provides details of old-age social security in the Netherlands.

Levels of education are defined according to the 1997 International Standard Classification of Education (ISCED; <https://isced.uis.unesco.org/>) and are based on SHARE items dn010 and dn012. ISCED 1-2 is referred as a low level of education, ISCED 3 as medium level of education and ISCED 4-5 as a high level of education. Income is defined as equivalized net monthly household income (SHARE item hh017e). The equivalence scales are 1 for a single person household and 1.5 for a couple household (marital status is based on SHARE item dn014). Income is not observed for Wave 1 (a different income concept was used for Wave 1) and there is item nonresponse for income for the other Waves. Further, the bottom 1% and top 5% of income distribution was deleted because of, e.g., a high likelihood that annual instead of monthly income was reported. Of the 24% of observations for which income was a missing value, 18 percentage points were replaced by (non-missing) income from either the previous or the next wave. Income deciles are based on respondents' income in their first wave of observation. Hence, the income decile of a respondent is time invariant.

The main analysis uses five health measures; the first two relate to physical health, the third and fourth ones relate to mental health, and the fifth one is a combination of risky health behavior, physical health and mental health. The first health measure is the number of limitations of (instrumental) activities of daily living, henceforth referred to as (I)ADL limitations. Table A.2 reports the SHARE items on which this measure is based, including the limitations it concerns such as difficulties with getting up from a chair, preparing a hot meal or showering. The maximum number of limitations is 20. The second health measure is the number of health conditions (ever told by a doctor) such as a stroke, cancer, high blood pressure or diabetes (Table A.2), henceforth referred to as health conditions. The maximum number of health conditions is 11. Our third health measure is the EURO-D scale used to measure

depression, henceforth referred to as depression. The EURO-D scale is a 12-points scale based on questions on happiness, depression, hope for future, suicidal feelings, guilty feelings, sleeping trouble, no interest in things, fatigue, concentration, and fearfulness (Table A.2; Mehrbrodt, Gruber & Wagner, 2019). Respondents are classified as having a depression when their EURO-D index is larger than three points; a measure of depression that is strongly correlated with clinically significant depression (Prince et al., 1999). Our fourth health measure is the number of words recalled from a list of 10 words presented earlier during the interview, henceforth referred to as cognition (SHARE item cf007, cf008tot and cf104- cf107; items vary by wave). Our fifth health measure is a health deficiency index (a fraction between 0 and 1) measured with the sum divided by six of currently smoking, ever having smoked (items br001 and br002) or at least once a week consuming alcohol (items br010 and br039), being obese ($BMI \geq 30$, based on items ph013 for height and ph012 for weight), at least one (I)ADL limitation, at least on health condition, being depressed ($EURO-D > 3$), and the fraction of the number of words not recalled (cognition).

2.2 *Data selection*

The raw data from the Netherlands consists of 30,870 interviews of respondents whose gender and date of birth are observed (for 16 respondents their month of birth was missing). The variables needed for our analysis have been collected in the regular biennial waves of SHARE. Therefore, from the start, the nonregular Wave 3 (a life history survey; 2,341 observations) and COVID-19 Waves (two additional surveys in between regular waves; 2,082 and 739 observations) were excluded. Also excluded are the exit interviews for deceased respondents (479 observations). The raw data for Waves 1-2 and 4-9 for the Netherlands has, therefore, 25,229 observations of 9,350 individuals (6,074 households).

We selected retirees aged 60-79 (12,045 observations, 48% of the sample) and removed observations with missing information on the socioeconomic and health variables used for the analysis (about 10% of the selected sample). The sample used for the analysis has 10,841 observations of 4,623 individuals (3,248 households). Table 1 shows the number of observations and sample statistics on gender, age and income by wave. The average age and percentage of women increased over the observation period, possibly because of increases in the state pension age and retirement age over time (see Table A.3). For all waves combined, Table 2 shows a positive income-health gradient for each of our five health measures.

< Tables 1 and 2 >

3. EMPIRICAL RESULTS

3.1 Main findings

By and large, Figures 4 and 5 show that individuals in the higher income decile were on average in better physical health, i.e., fewer (I)ADL limitations and health conditions, than those in the lower income deciles. Also, Figures 6 and 7 show that individuals in the higher the income decile were on average in better mental health, i.e., a lower depression index and better cognition (recalled more words), than those in the lower income deciles. Further, Figure 8 shows that compared to individuals those in the lower income deciles, those in the higher income deciles were on average in better health, i.e., fewer health deficiencies (a measure based on risky health behavior, physical health and mental health).

Figures 4-8 do not show clear patterns of how the income-health gradients changed over time. Therefore, we used linear regressions to investigate such changes. The regressions related each of the health measures with the income deciles and controlled for gender, age-specific fixed

effects, and wave-specific fixed effects (the results are not reported in a table). In particular the control for wave specific effects is needed because some of the pattern in the figures, such as higher word recall scores for Waves 6 and 7, can be related to survey mode effects (see Section 2). The regression results support for each of the five health measures that individuals in the higher income deciles were on average healthier than those in the lower deciles (p-values < 0.001). The results do not support that these gradients varied over time (p-values in between 0.327 and 0.883).

< Figures 4 and 8 >

3.2 *Robustness checks*

Several additional analyses have been carried out to check the sensitivity of the main finding of no changes in income-based health inequality over time.

The main findings remained when selecting all individuals aged 60-79 instead of retirees aged 60-79 (results not reported). Next, Figure 9 shows the income-health gradient for self-assessed health, a health measure often used in the literature (e.g., van Kippersluis et al., 2009). In line with the findings in Figures 4-8, regression results support a positive income-health gradient (p-value < 0.001) and do not support that this gradient changed over time (p-value = 0.388) (the regression results are not reported).

< Figure 9 >

Further, an analysis of risky health behavior (Table A.5) shows no empirical support for an income gradient in currently smoking or ever having smoked, and shows suggestive evidence of an increase in income-based inequality in alcohol consumption over time (Table A.5's footnote).

Also, Table 3 shows health inequalities by level of education. Regression results (not reported in a table) support positive education-health gradients (p-values < 0.001). Hence, in this respect the findings of Table 3 are in accordance with those in Figures 4-8. There is, however, support for a strengthening of the education-health gradient when using (I)ADL (p-value = 0.004). For the other four health measures there is no support for a change in the education-based health inequality over time (p-values in between 0.165 and 0.546).

Finally, Table 4 shows health inequalities by gender. The null hypothesis of no gender differences in health is not rejected for health deficiencies (p-value = 0.329) and is rejected for the other four health measures (p-values < 0.001). Furthermore, there is no empirical support for changes in gender-based health inequality over time (p-values in between 0.058 and 0.890). Concerning the latter results, the lowest p-value of 0.058 is for health deficiencies and can be considered suggestive evidence of an increase in gender-based health inequality. This finding can be related to the finding discussed above of an increase in income-based inequality in alcohol consumption over time (Table A.5).

< Tables 3 and 4 >

4. CONCLUSIONS

Our main empirical findings provide no empirical support for changes in income-based health inequalities among retirees in the Netherlands during the last two decades. Previous findings,

however, show that the income-mortality gradient has increased, which suggests that the health gains have been unequally distributed across the income distribution. Also, our analysis of education-based health inequalities supports increased inequality for (I)ADL limitations. Furthermore, our analysis of gender-based health inequalities provide suggestive evidence of increased inequality for health deficiencies, which can reflect the suggestive evidence we found of increased income-based alcohol consumption inequality.

A conclusion that can be drawn from our empirical findings is that there is no empirical support for a decrease in health inequalities over time based on income, education or gender. Arguably, larger samples, such as administrative data which is often used to analyze the income-mortality gradient, are needed to investigate the evolution of health inequalities before drawing firm conclusions.

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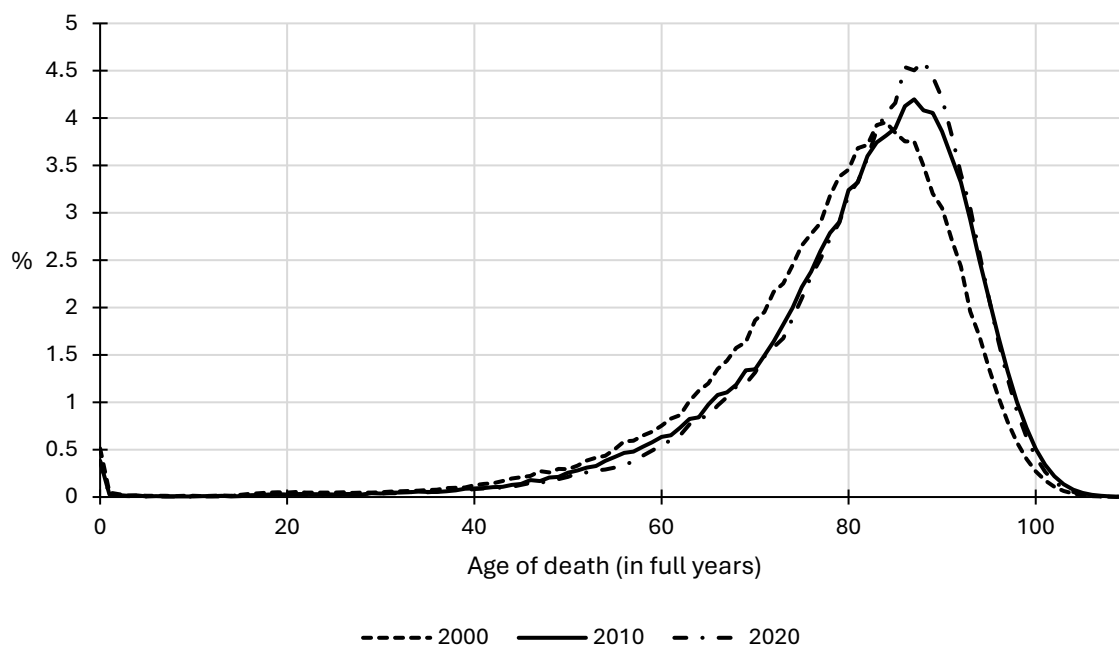
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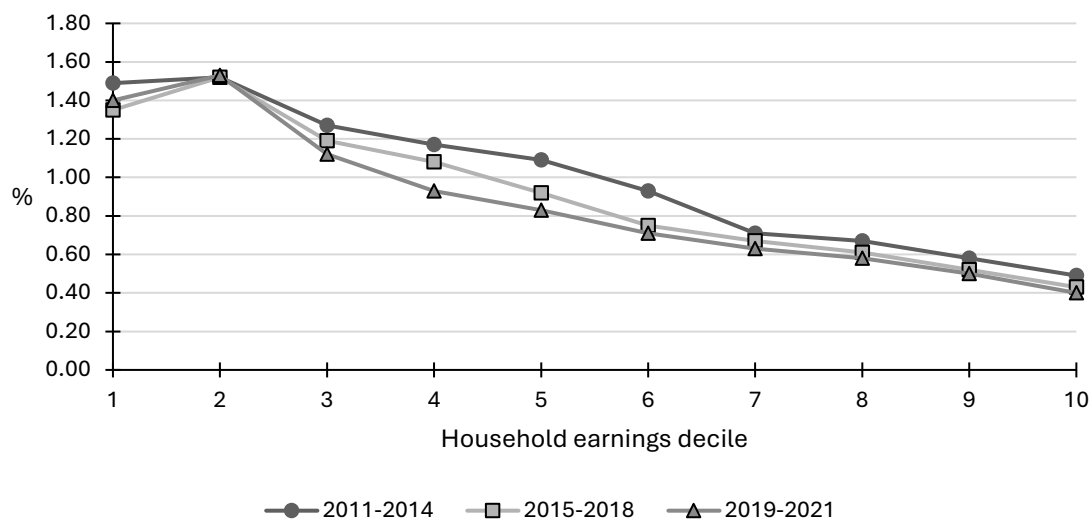
Figure 1 The age of death distribution.



Source: Human Mortality Database (HMD; www.mortality.org).

Notes. For men and women combined and based on period life tables. Period life expectancy was 77.6 years in 2000, 80.3 in 2000, and 80.9 in 2020. The standard deviation of the age of death was 14.5 years in 2000, 13.7 in 2000, and 13.2 in 2020.

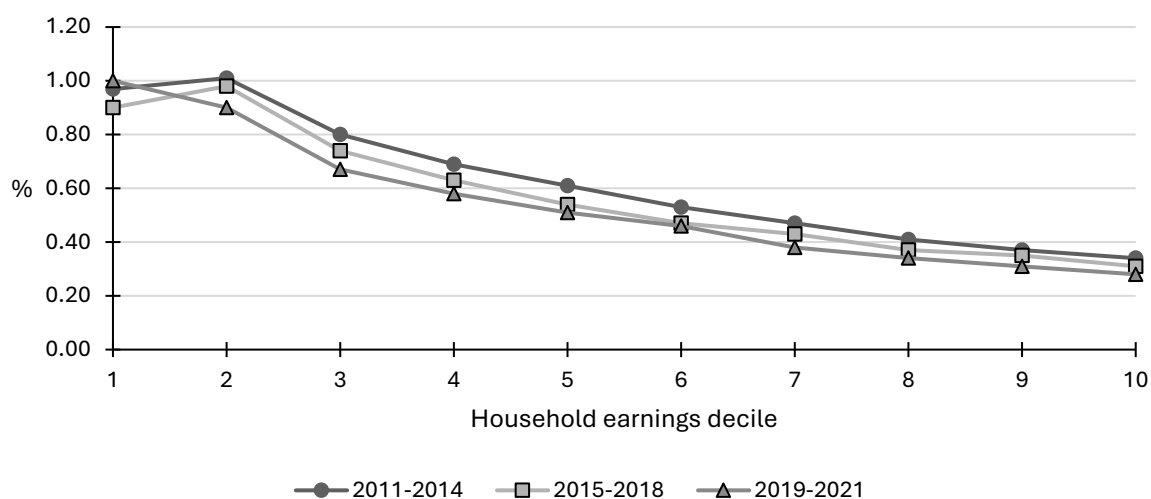
Figure 2 Men's annual mortality rate by earnings decile and period.



Source: Kalwij and Kapteyn (2026).

Note. The numbers of this Figure are in Table A.1.

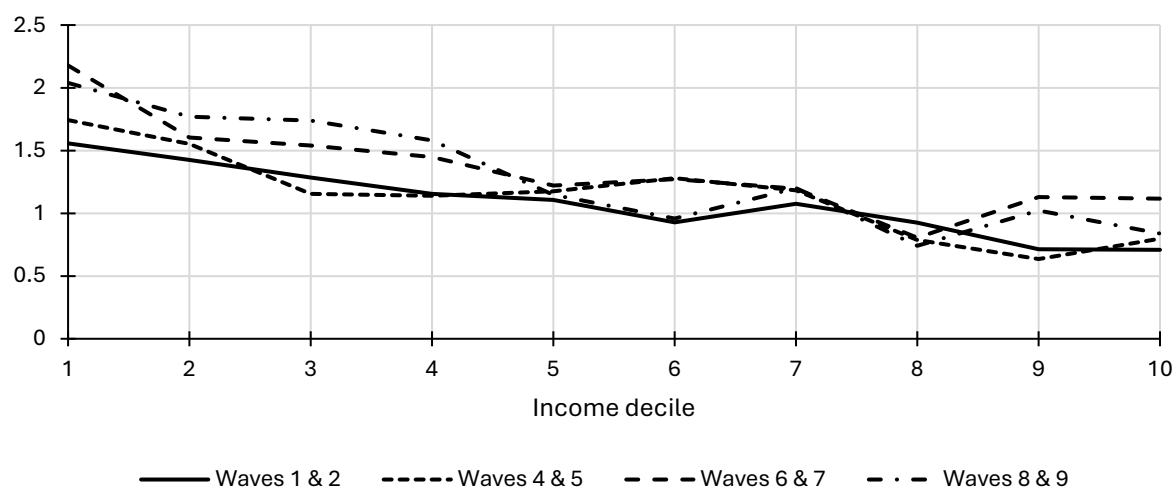
Figure 3 Women's annual mortality rate by earnings decile and period.



Source: Kalwij and Kapteyn (2026).

Note. The numbers of this Figure are in Table A.1.

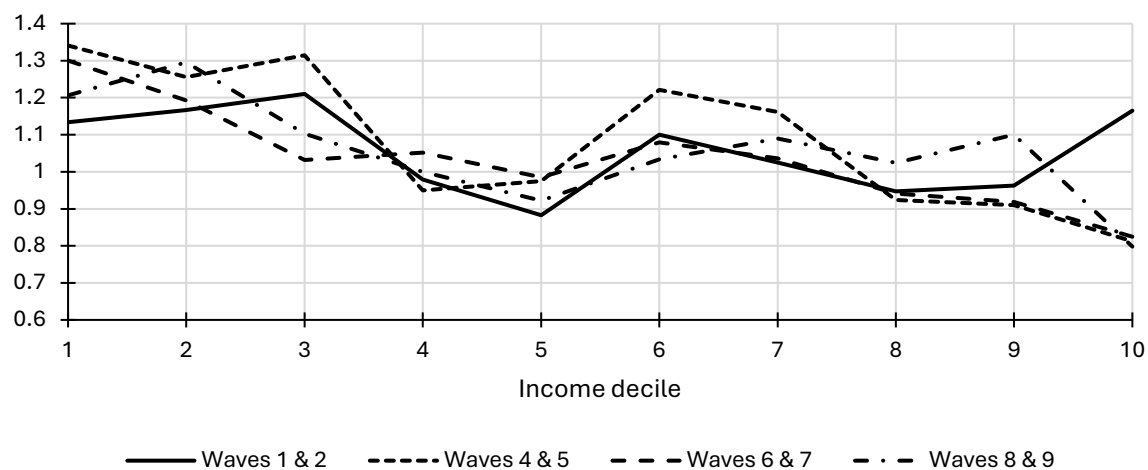
Figure 4 (I)ADL limitations by income decile over time.



Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2. (I)ADL = (instrumental) activities of daily living. The numbers for this Figure are in Table A.4.

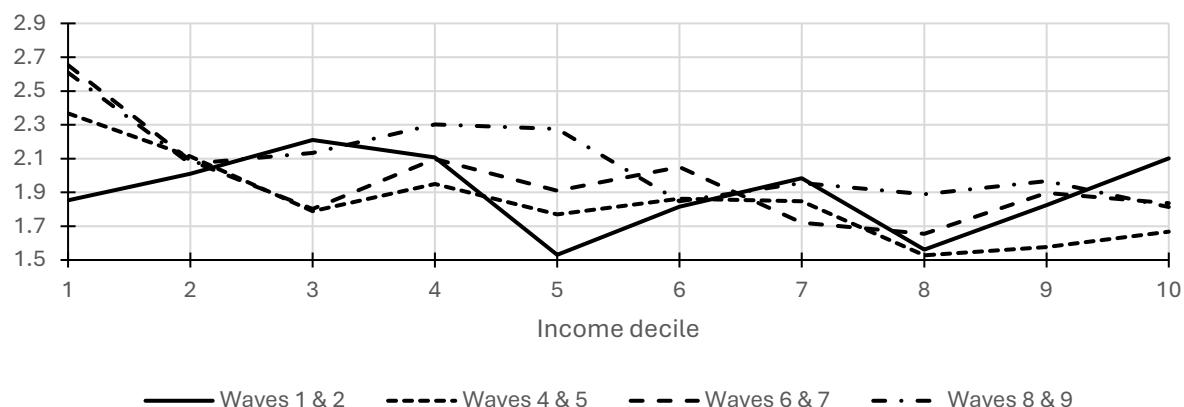
Figure 5 Health conditions by income decile over time.



Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2. The numbers for this Figure are in Table A.4.

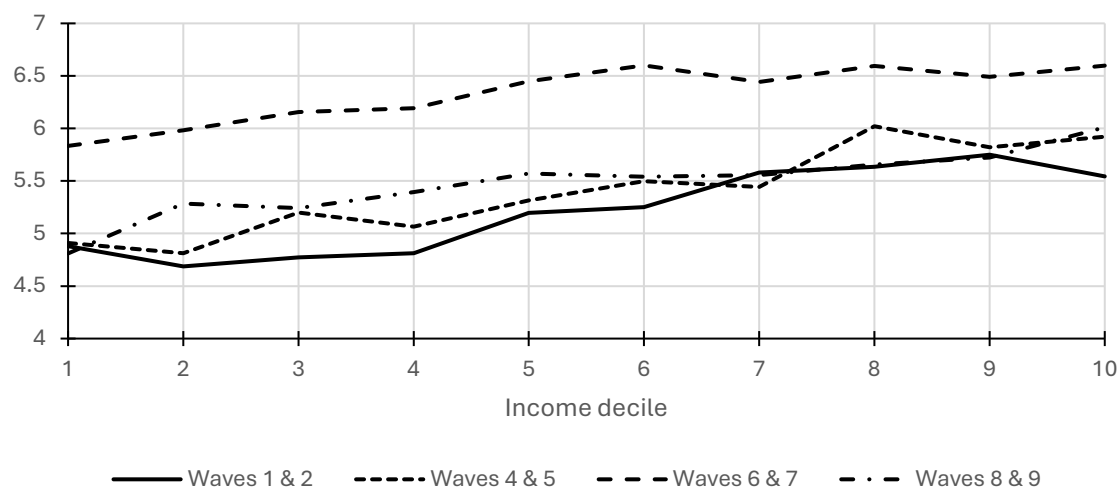
Figure 6 Depression by income decile over time.



Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2. Depression is measured with the Euro-D scale (a maximum of 12). The numbers for this Figure are in Table A.4.

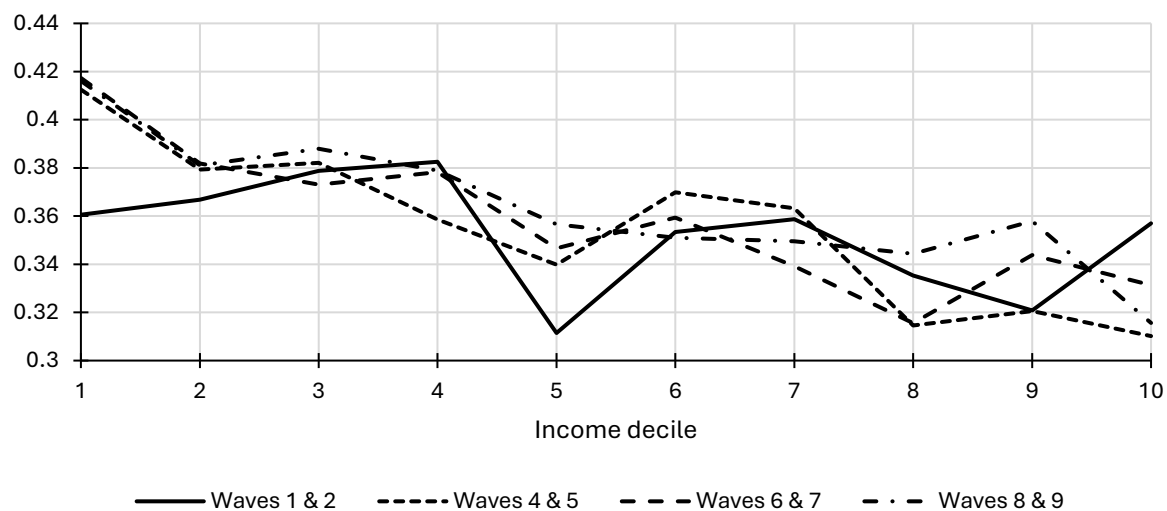
Figure 7 Cognition by income decile over time.



Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2. Cognition is measured with a word recall question (a maximum of 10 words). The numbers for this Figure are in Table A.4.

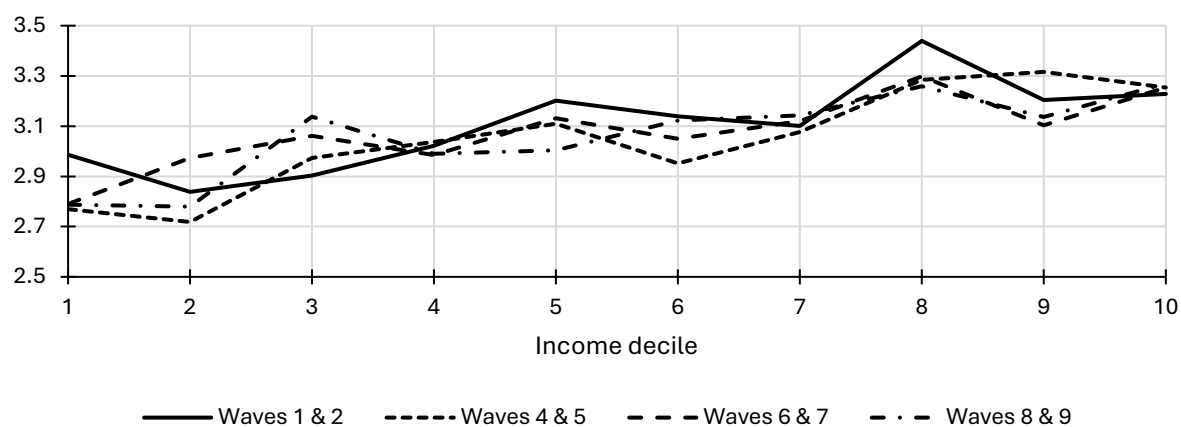
Figure 8 Health deficiencies by income decile over time.



Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2. Health deficiencies is based on physical and mental health measures (a 0-1 scale). The numbers for this Figure are in Table A.4.

Figure 9 Self-assessed health by income decile over time.



Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2. Self-assessed health is on a scale from poor (1) to excellent (5).

Table 1 Sample statistics on gender, age and income.

Wave	Period (years)	Number of observations	Percentage women	Average age	Average income
1	2004	645	47	70	2,211
2	2007	862	47	70	2,254
4	2011	1,149	49	70	2,406
5	2013	1,755	50	70	2,406
6	2015/16	2,010	47	70	2,687
7	2017/18	2,111	49	71	2,705
8	2019/20	1,081	50	72	2,500
9	2021/22	1,228	51	72	2,519
Total	2004-2022	10,841	49	71	2,515

Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample: retirees aged 60-79 from the Netherlands. Age is measured in years and income refers to equivalized net monthly household income in 2024 euro.

Table 2 Number of observations and averages of income and health by income decile.

Income decile	Number of observations	Income	(I)ADL	Health conditions	Depression	Cognition	Health deficiency
1	935	1424	1.93	1.27	2.44	5.22	0.41
2	1,098	1663	1.58	1.22	2.08	5.30	0.38
3	1,283	1855	1.43	1.15	1.92	5.50	0.38
4	1,105	2001	1.34	1.00	2.10	5.50	0.37
5	1,220	2256	1.18	0.95	1.90	5.78	0.34
6	1,228	2553	1.16	1.11	1.93	5.92	0.36
7	989	2759	1.18	1.08	1.84	5.88	0.35
8	1,077	3167	0.80	0.96	1.66	6.11	0.32
9	1,153	3609	0.94	0.97	1.83	6.05	0.34
10	753	4414	0.91	0.85	1.81	6.14	0.32
Total	10,841	2515	1.25	1.06	1.95	5.74	0.36

Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2.

Table 3 **Health inequalities by level of education (low, medium or high).**

By education	Waves 1 & 2	Waves 4 & 5	Waves 6 & 7	Waves 8 & 9	All waves
(I)ADL limitations					
Low	1.25	1.33	1.54	1.65	1.44
Medium	0.86	1.15	1.41	1.40	1.28
High	1.06	0.82	1.08	0.83	0.95
Ratio low/high	1.18	1.62	1.42	2.00	1.51
Health conditions					
Low	1.17	1.20	1.12	1.18	1.16
Medium	0.90	1.13	1.03	1.08	1.05
High	0.88	0.88	0.96	0.92	0.92
Ratio low/high	1.33	1.37	1.16	1.28	1.26
Depression					
Low	2.03	2.01	2.11	2.24	2.09
Medium	1.77	1.80	1.99	2.01	1.92
High	1.60	1.59	1.78	1.97	1.78
Ratio low/high	1.27	1.27	1.18	1.13	1.18
Cognition					
Low	4.86	5.08	6.13	5.07	5.38
Medium	5.46	5.37	6.11	5.38	5.67
High	5.69	5.94	6.74	5.98	6.28
Ratio low/high	0.85	0.86	0.91	0.85	0.86
Health deficiencies					
Low	0.37	0.38	0.38	0.40	0.39
Medium	0.34	0.36	0.37	0.37	0.38
High	0.32	0.31	0.33	0.33	0.34
Ratio low/high	1.14	1.20	1.16	1.22	1.15

Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2.

Table 4 Health inequalities by gender.

	Waves 1 & 2	Waves 4 & 5	Waves 6 & 7	Waves 8 & 9	All waves
(I)ADL limitations					
Men	0.75	0.74	1.02	0.91	0.88
Women	1.56	1.57	1.70	1.62	1.63
Ratio men/women	0.48	0.47	0.60	0.56	0.54
Health conditions					
Men	1.07	1.13	1.09	1.10	1.10
Women	1.04	1.07	0.98	1.01	1.02
Ratio men/women	1.03	1.06	1.12	1.09	1.08
Depression					
Men	1.55	1.46	1.61	1.75	1.59
Women	2.30	2.24	2.35	2.38	2.32
Ratio men/women	0.67	0.65	0.69	0.74	0.69
Cognition					
Men	4.93	5.21	6.10	5.36	5.55
Women	5.37	5.55	6.60	5.63	5.93
Ratio men/women	0.92	0.94	0.92	0.95	0.94
Health deficiencies					
Men	0.36	0.36	0.36	0.35	0.36
Women	0.35	0.36	0.36	0.37	0.38
Ratio men/women	1.01	0.99	0.98	0.95	0.96

Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2.

APPENDIX TABLES A.1-A.5

Table A.1 The numbers for Figures 2 and 3.

Men	2011-2014	2015-2018	2019-2021	Changes over time
Earnings decile	%	%	%	%-points
1	1.49	1.35	1.40	-0.09
2	1.52	1.52	1.53	0.01
3	1.27	1.19	1.12	-0.15
4	1.17	1.08	0.93	-0.24
5	1.09	0.92	0.83	-0.26
6	0.93	0.75	0.71	-0.22
7	0.71	0.67	0.63	-0.08
8	0.67	0.61	0.58	-0.09
9	0.58	0.52	0.50	-0.08
10	0.49	0.43	0.40	-0.09
Total	0.99	0.90	0.86	
P1/P10	3.04	3.14	3.50	
P1/P5	1.37	1.47	1.69	
P5/P10	2.22	2.14	2.08	
Women	2011-2014	2015-2018	2019-2021	Changes over time
Earnings decile	%	%	%	%-points
1	0.97	0.90	1.00	0.03
2	1.01	0.98	0.90	-0.11
3	0.80	0.74	0.67	-0.13
4	0.69	0.63	0.58	-0.11
5	0.61	0.54	0.51	-0.10
6	0.53	0.47	0.46	-0.07
7	0.47	0.43	0.38	-0.09
8	0.41	0.37	0.34	-0.07
9	0.37	0.35	0.31	-0.06
10	0.34	0.31	0.28	-0.06
Total	0.62	0.57	0.54	
P1/P10	2.85	2.90	3.57	
P1/P5	1.59	1.67	1.96	
P5/P10	1.79	1.74	1.82	

Source: Kalwij and Kapteyn (2026).

Notes: Cells contain annual mortality rates in percentages. Earnings are equivalized household earnings from all income sources except wealth (check). Ultimate column: ‘Change over time’ refers to the mortality rate for the period 2019-2021 minus the one for the period 2011-2014. P1/P10 is the mortality rate for the first decile divided by the mortality rate for the tenth decile, and likewise for P1/P5 and P5/P10.

Table A.2 Details of the health measures.

Health measure	Item	Categories included
(I)ADL limitations	ph048	1 Walking 100 metres
		2 Sitting for about two hours
		3 Getting up from a chair after sitting for long periods
		4 Climbing several flights of stairs without resting
		5 Climbing one flight of stairs without resting
		6 Stooping, kneeling, or crouching
		7 Reaching or extending your arms above shoulder level
		8 Pulling or pushing large objects like a living room chair
		9 Lifting or carrying weights over 10 pounds/5 kilos, like a heavy bag of groceries
		10 Picking up a small coin from a table
	ph049	11 Dressing, including putting on shoes and socks
		12 Walking across a room
		13 Bathing or showering
		14 Eating, such as cutting up your food
		15 Getting in or out of bed
		16 Using the toilet, including getting up or down
		17 Using a map to figure out how to get around in a strange place
		18 Preparing a hot meal
		19 Shopping for groceries
		20 Making telephone calls
Health conditions	ph006	1 Heart attack
		2 High blood pressure or hypertension
		3 High blood cholesterol
		4 Stroke
		5 Diabetes or high blood sugar
		6 Chronic lung disease
		7 Cancer
		8 Stomach or duodenal ulcer, peptic ulcer
		9 Parkinson disease
		10 Cataracts
		11 Hip fracture or femoral fracture
Depression	mh002	1 Sad or depressed last month
	mh003	2 Hopes for the future
	mh004	3 Suicidal feelings or wish to be dead
	mh005	4 Feels guilty
	mh007	5 Trouble sleeping
	mh008	6 Less interest than usual
	mh010	7 Irritability
	mh011	8 No appetite
	mh013	9 Fatigue
	mh014/015	10 Difficulty concentrating
	mh016	11 Fails to mention any enjoyable activity
	mh017	12 Tearfulness

Source: Survey of Health, Ageing and Retirement in Europe.

Table A.3 The state pension age and average retirement age by year.

Year	State pension age	Average retirement age
2003	65.0	61.0
2004	65.0	60.8
2005	65.0	60.9
2006	65.0	60.9
2007	65.0	61.7
2008	65.0	61.9
2009	65.0	62.4
2010	65.0	62.8
2011	65.0	63.2
2012	65.0	63.5
2013	65.1	63.8
2014	65.2	63.9
2015	65.3	64.2
2016	65.5	64.4
2017	65.8	64.8
2018	66.0	65.1
2019	66.0	65.3
2020	66.3	65.7
2021	66.3	65.4
2022	66.6	65.6
2023	66.8	65.9
2024	67.0	66.1

Source: Statistics Netherlands (cbs.nl).

Table A.4 The numbers for Figures 4-8.

Wave	1	2	4	5	6	7	8	9	Total
Period (years)	2004	2007	2011	2013	2015- 2016	2017- 2018	2019- 2020	2021- 2022	2004- 2022
Figure 4. Limitations of (I)ADL									
1	1.57	1.55	1.66	1.79	2.39	1.98	2.50	1.65	1.93
2	1.71	1.18	1.44	1.63	1.61	1.59	1.98	1.57	1.58
3	1.60	1.02	1.13	1.17	1.63	1.45	1.72	1.76	1.43
4	1.11	1.18	1.15	1.14	1.51	1.39	1.49	1.67	1.34
5	1.10	1.11	1.33	1.06	1.06	1.37	1.20	1.11	1.18
6	0.90	0.96	1.35	1.24	1.32	1.22	0.98	0.94	1.16
7	1.04	1.10	1.31	1.07	1.17	1.22	1.08	1.31	1.18
8	0.83	0.98	0.89	0.72	0.71	0.89	0.57	0.88	0.80
9	0.77	0.67	0.55	0.69	1.16	1.10	1.06	0.99	0.94
10	0.86	0.58	0.96	0.72	1.08	1.15	0.74	0.92	0.91
Total	1.21	1.07	1.18	1.13	1.36	1.33	1.30	1.25	1.25
Figure 5. Health conditions									
1	1.06	1.20	1.32	1.35	1.35	1.25	1.32	1.11	1.27
2	1.18	1.15	1.28	1.24	1.26	1.12	1.40	1.20	1.22
3	1.28	1.16	1.30	1.33	1.12	0.94	1.13	1.07	1.15
4	1.07	0.92	0.83	1.02	1.23	0.89	1.07	0.93	1.00
5	0.93	0.85	1.00	0.96	1.08	0.90	0.89	0.95	0.95
6	1.06	1.14	1.19	1.24	1.15	1.01	1.03	1.04	1.11
7	0.98	1.06	1.09	1.23	1.03	1.04	1.09	1.09	1.08
8	0.74	1.06	0.85	0.98	1.00	0.89	0.95	1.09	0.96
9	1.04	0.90	0.87	0.94	0.90	0.93	1.04	1.15	0.97
10	1.28	1.07	0.61	0.91	0.82	0.82	0.74	0.84	0.85
Total	1.07	1.05	1.06	1.12	1.10	0.98	1.06	1.05	1.06
Figure 6. Depression									
1	1.88	1.83	2.30	2.41	2.52	2.78	2.77	2.47	2.44
2	2.12	1.92	2.11	2.12	2.06	2.12	2.16	1.99	2.08
3	2.21	2.21	1.89	1.71	1.71	1.90	2.14	2.13	1.92
4	2.13	2.09	1.96	1.94	2.15	2.05	2.35	2.25	2.10
5	1.54	1.53	1.79	1.76	1.80	2.01	2.32	2.24	1.90
6	1.78	1.85	2.21	1.67	2.11	1.99	2.00	1.72	1.93
7	2.02	1.96	1.84	1.85	1.81	1.63	1.87	2.03	1.84
8	1.66	1.51	1.52	1.53	1.69	1.62	1.63	2.10	1.66
9	1.68	1.93	1.47	1.65	1.84	1.95	1.81	2.10	1.83
10	2.14	2.07	1.88	1.56	1.77	1.90	1.81	1.81	1.81
Total	1.93	1.88	1.89	1.82	1.94	1.98	2.06	2.08	1.95

Table A.4 Continued.

Wave	1	2	4	5	6	7	8	9	Total
Period (years)	2004	2007	2011	2013	2015- 2016	2017- 2018	2019- 2020	2021- 2022	2004- 2022
Figure 7. Cognition									
1	4.67	5.05	4.93	4.90	5.66	5.99	4.66	4.94	5.22
2	4.60	4.76	4.83	4.80	5.89	6.08	5.19	5.38	5.30
3	4.49	5.01	5.20	5.20	6.08	6.23	5.14	5.35	5.50
4	4.67	4.91	5.07	5.06	6.24	6.15	5.37	5.42	5.50
5	5.00	5.32	5.41	5.25	6.44	6.45	5.50	5.64	5.78
6	5.08	5.41	5.48	5.51	6.57	6.63	5.45	5.61	5.92
7	5.62	5.56	5.40	5.48	6.56	6.33	5.52	5.58	5.88
8	5.60	5.66	6.00	6.04	6.57	6.62	5.65	5.67	6.11
9	5.57	5.89	5.67	5.91	6.55	6.44	5.64	5.79	6.05
10	5.58	5.51	6.10	5.83	6.56	6.63	5.92	6.08	6.14
Total	4.98	5.25	5.38	5.38	6.32	6.36	5.42	5.57	5.74
Figure 8. Health deficiencies									
1	0.37	0.35	0.40	0.42	0.43	0.41	0.44	0.39	0.41
2	0.38	0.35	0.38	0.38	0.38	0.38	0.40	0.37	0.38
3	0.40	0.36	0.39	0.38	0.37	0.37	0.40	0.37	0.38
4	0.39	0.38	0.35	0.36	0.39	0.37	0.38	0.38	0.37
5	0.32	0.30	0.34	0.34	0.34	0.35	0.35	0.36	0.34
6	0.36	0.34	0.40	0.35	0.36	0.36	0.37	0.33	0.36
7	0.34	0.37	0.37	0.36	0.35	0.33	0.34	0.36	0.35
8	0.33	0.34	0.31	0.32	0.32	0.32	0.33	0.36	0.32
9	0.32	0.32	0.30	0.33	0.34	0.35	0.35	0.37	0.34
10	0.39	0.33	0.28	0.33	0.33	0.33	0.31	0.32	0.32
Total	0.36	0.35	0.36	0.36	0.36	0.36	0.37	0.36	0.36

Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2.

Table A.5 Risky health behavior by income decile and sets of waves.

	Waves 1 & 2	Waves 4 & 5	Waves 6 & 7	Waves 8 & 9	All waves
Income decile	Body Mass Index (BMI)				
1	26.30	27.40	27.08	27.56	27.14
2	27.14	27.14	26.48	27.23	26.91
3	26.43	26.89	26.39	26.65	26.60
4	26.59	26.66	26.64	26.46	26.60
5	26.48	26.13	25.86	25.67	25.98
6	26.14	26.31	26.22	25.75	26.14
7	25.87	25.95	25.99	25.67	25.89
8	26.24	25.86	25.36	25.77	25.70
9	25.25	25.64	25.86	25.66	25.70
10	25.52	25.63	26.24	25.27	25.74
Total	26.31	26.40	26.19	26.11	26.25
Income decile	Currently smoking or ever smoked				
1	0.62	0.61	0.66	0.65	0.64
2	0.52	0.54	0.61	0.53	0.56
3	0.66	0.65	0.67	0.64	0.66
4	0.68	0.58	0.67	0.63	0.64
5	0.51	0.59	0.65	0.63	0.61
6	0.68	0.58	0.61	0.59	0.61
7	0.61	0.63	0.63	0.67	0.64
8	0.67	0.64	0.60	0.63	0.63
9	0.59	0.61	0.63	0.65	0.63
10	0.68	0.60	0.63	0.61	0.62
Total	0.62	0.60	0.64	0.63	0.62
Income decile	Alcohol consumption				
1	0.52	0.41	0.64	0.45	0.52
2	0.45	0.42	0.69	0.51	0.54
3	0.51	0.59	0.75	0.66	0.65
4	0.63	0.63	0.75	0.65	0.68
5	0.56	0.70	0.76	0.70	0.70
6	0.63	0.72	0.80	0.73	0.74
7	0.71	0.69	0.74	0.72	0.72
8	0.72	0.78	0.84	0.80	0.80
9	0.76	0.84	0.78	0.80	0.80
10	0.78	0.84	0.86	0.76	0.82
Total	0.61	0.66	0.76	0.69	0.70

Source: Survey of Health, Ageing and Retirement in Europe.

Notes. Own computations. Sample and definitions of variables: see Section 2. The null hypothesis of no income gradient is rejected for BMI and alcohol consumption (p-values < 0.001) and not for smoking behavior (p-value = 0.174). There is no support for a change in inequality for BMI (p-value 0.695), neither for smoking behavior (p-value = 0.293), and there is suggestive support for an increase in income-based alcohol consumption inequality (p-value = 0.015).