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# Is Working Longer in Jeopardy?

## Health and Labor Force Participation of Middle-Aged Europeans

Axel Börsch-Supan, Irene Ferrari, Giacomo Pasini, and Luca Salerno

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**Abstract:**

We use SHARE data from eight European countries to measure the evolution of health of middle-aged individuals over time. In contrast to earlier findings in Europe, we observe a stalling health trend for individuals of later year of birth using an index measuring health deficits. We even observe a slightly negative trend for men and large heterogeneity when we stratify by wealth and education. The difference between cohorts is largest for males who spent relatively few years in education. All this reflects recent developments in the US where life expectancy is decreasing. Closely connected to health trends of middle-aged individuals we further investigate developments in labor market participation rates over time using the European Labor Force Survey. We do not find any evidence for falling or stagnating employment rates and thus no correlation between health and employment trends. Health does not seem to be a main driver in the decision whether to participate in the labor market or not.

**Zusammenfassung:**

Wir nutzen SHARE Daten aus acht europäischen Ländern, um die Entwicklung der Gesundheit von Personen mittleren Alters über Zeit zu messen. Im Gegensatz zu früheren Forschungsergebnissen für Europa, beobachten wir eine stagnierende Entwicklung in der Gesundheit jüngerer Kohorten. Wir finden sogar einen leicht negativen Zusammenhang für Männer und große Unterschiede, wenn wir nach Vermögen und Bildungsstand trennen - dies trifft vor allem auf Männer zu, die vergleichsweise wenige Jahre in Ausbildung vorweisen können. All das spiegelt aktuelle Entwicklungen aus den Vereinigten Staaten wider, wo die Lebenserwartung seit einigen Jahren sinkt. Mit der Gesundheit von Individuen mittleren Alters verbunden, untersuchen wir auch Entwicklungen in der Erwerbsbeteiligung dieser Personen anhand von Daten der Arbeitskräfteerhebung der Europäischen Union. Wir finden keine Hinweise auf stagnierende oder gar fallende Beschäftigungsquoten und folglich keine Korrelation zwischen Gesundheit und Entwicklungen im Arbeitsangebot. Gesundheit scheint kein Haupttreiber in den Arbeitsmarktentscheidungen von Individuen zu sein.

**Keywords:**

General health, employment, Life expectancy

**JEL Classification:**

I10, I14, J14, J21

# Is Working Longer in Jeopardy?
# Health and Labor Force Participation of Middle-Aged Europeans

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# 1 Introduction

Europe is different from the US in many respects. On the one hand, almost all EU countries feature a higher life expectancy (OECD 2019), higher healthy life expectancy (WHO 2019) and better health in general (Avendano et al. 2009, Avendano and Kawachi 2014) than the US. The causes for these differences are controversial. Bloom et al. (2018) provides some evidence for a link between better health status and universal health insurance in Europe.

On the other hand, labor force participation at older ages is much lower in Europe than in the US. The causes for this difference are less controversial since there is a large body of evidence linking the strong financial incentives in most European countries to early retirement (Gruber & Wise 2004). The reduction of these incentives in the late 1990s and early 2000s have reverted the trend to ever earlier retirement and led to a strong increase of old-age employment until today (Börsch-Supan and Coile 2019 and forthcoming). From a health point of view, this increase was possible since the health capacity to work longer was plentiful in Europe for cohorts approaching retirement in the early 2000s (Wise 2017).

This chapter addresses two key questions. First, will this health capacity remain or will Europe experience a trend similar to the US in that middle-aged cohorts have worse health than their older peers when they were middle aged? We use panel data for eight EU countries and Switzerland from the Survey of Health, Ageing and Retirement in Europe (SHARE) to measure health by age and cohort, stratifying by education and wealth. Our findings contradict the folklore in Europe and earlier scientific studies which claim that medical progress keeps improving health in Europe for all cohorts.

The second key question is whether also employment of middle-aged individuals faces a declining trend similar to that in the US. We use data from the European Labor Force Survey and aggregated by Eurostat to create a pseudo-panel for the same countries as in the first part. We do not find any evidence for a reduction of middle-aged employment in Europe, opposite to the trend in the US.

Both findings fit well with the results by Coile et al. (2016) that health trends have very little predictive value for employment trends in Europe. While health is a significant determinant of labor force participation in a cross-section within each country, health neither explains the cross-national differences in old-age labor force participation nor its trajectory over time. Financial incentives by far dominate all other potential explanations, including health.

Section 2 describes our data and the variables used. Section 3 addresses the first question of health trends by cohort. Section 4 describes employment of middle-aged and older individuals. Section 5 concludes.

## 2 Data and key variables

The Survey of Health, Ageing and Retirement in Europe (SHARE) includes a wide range of micro-data on socio-economic status, social and family networks as well as health across European countries. SHARE Release 7.0.0 provides a multidisciplinary and cross-national database with currently about 140,000 individuals aged 50 or older in 28 countries. A detailed description can be found in Börsch-Supan et al. (2013).

For the analysis of health trends, we define middle-aged as age 50-64. For comparison, we also provide some evidence for the 65-85 group. It is important for this chapter to separate age and cohort effects. This requires a sufficiently large time horizon. We therefore only include those SHARE countries that delivered data in all seven waves of SHARE. These are Austria (N=15,267, M=6,914)[1], Belgium (N=23,671, M=12,481), Denmark (N=14,730, M=7,884), France (N=19,482, M=10,062), Germany (N=17,390, M=8,793), Italy (N=19,743, M=8,856), Spain (N=20,214, M=8,632), Sweden (N=16,295, M=6,469), and Switzerland (N=12,069, M=5,828).

The key variable in the first part of this paper is a variant of the health deficit index proposed by Mitnitski, Mogilner, and Rockwood (2001) which has been used by Abeliansky and Strulik (2019) for an application to SHARE data. Essentially, the health deficit index is the number of health deficits which an individual has relative to the possible number of health deficits that are measured in the SHARE data:

$$Health\ Deficit\ Index = \frac{\Sigma(x_i)}{n} \qquad (1)$$

where $x_i \in [0, 1]$ denotes health measure $i$ and $n$ the number of health measures.[2]

[1] *N* corresponds to the number of observations from that country in our extended sample (i.e. women and men from age 50-85). Most of the empirical part refers to the subsample of middle-aged individuals (age 50-64) with size *M*.

[2] If there were missing values for some of the variables used, we reduced the denominator by the corresponding number of missing variables. The health index is thus always relative to the number of available health measures.

SHARE provides 52 health deficits which are available in all seven waves. Abeliansky and Strulik (2019) choose 38 items, including 4 items which were not available in all waves. They explain their choice by claiming that these represent aging-related health deficits.

The MEA health deficit index deviates from their approach for two reasons. First, for reasons of parsimony, we want to include only those items that add explanatory power and avoid too much multicollinearity. Second, we want to include only those items that are related to workability. We accomplish both aims simultaneously by using the Least Absolute Shrinkage and Selection Operator (Lasso) technique, a method for selecting and fitting covariates in a regression model predicting labor force participation. Lasso seeks for regression coefficients which minimize the residual sum of squares like ordinary least squares. In addition, however, it penalizes the number of covariates to obtain a more parsimonious model which, in general, will have better out-of-sample prediction accuracy.[3] This procedure leads to the exclusion of only one of the 52 available variables, showing that most of the items matter for labor force participation. A detailed list of the variables used is included as Appendix C.

We stratify the analysis of age and cohort-specific health deficits by educational attainment and wealth. This should avoid confounding effects since education has been increasing steadily for the birth cohorts considered. We split the sample into higher and lower educated depending on the median of each cohorts' education years. Wealth of the household in which the respondent lives is measured as the household's total net worth variable contained in the fully imputed version of the SHARE dataset.[4]

For the analysis of employment, we define middle-aged as age 50-59. Since Europeans are healthier but retire later than Americans, the different age bands for health and employment trends are important to maintain comparability with the US. We compare the employment of middle-aged with older individuals (age 60-74) and youth employment (age 25-34). Employment data by age and year were taken from Eurostat, file "Employment rates by sex, age and educational attainment level" [lfsa_ergaed] for the eight EU countries and Switzerland as retrieved in January 2020 and published in December 2019. The data were aggregated by

[3] Lasso penalizes the sum of the regression coefficients in absolute size by setting some of the coefficients to zero This reduces the variance of the predicted values (Tibshirani (1996) and James, Witten, Hastie, and Tibshirani (2013). We choose the penalty parameter by cross-validation, i.e. by using the penalty parameter with the largest out-of-sample prediction accuracy.

[4] The multiple imputation algorithm uses the conditional specification approach of Van Buuren, Brand, Groothuis-Oudshoorn, and Rubin (2006). We use the average calculated from all five available imputations. A detailed description of the imputation method in SHARE can be found in De Luca, Celidoni, and Trevisan (2015) and De Luca and Rossetti (2019). An evaluation of the method of multiple imputations in longitudinal wealth data can be found in Westermeier and Grabka (2016).

Eurostat from its Labor Force Surveys. We converted these data into a pseudo-panel by age and cohort.

# 3 Health trends of the middle aged in Europe

We first address the question whether the health advantage of Europeans vis-à-vis US-American will remain or even improve for younger cohorts – or whether Europe will experience a similar trend as the US in that younger cohorts have worse health than their predecessors. We start by providing descriptive evidence on basic trends. Subsection 3.2 provides a more formal analysis using regression analysis. This delivers significance levels for the cohort trends, permits a stratification by wealth, education and sex, and an investigation how the composition of health deficits changed over cohorts and time.

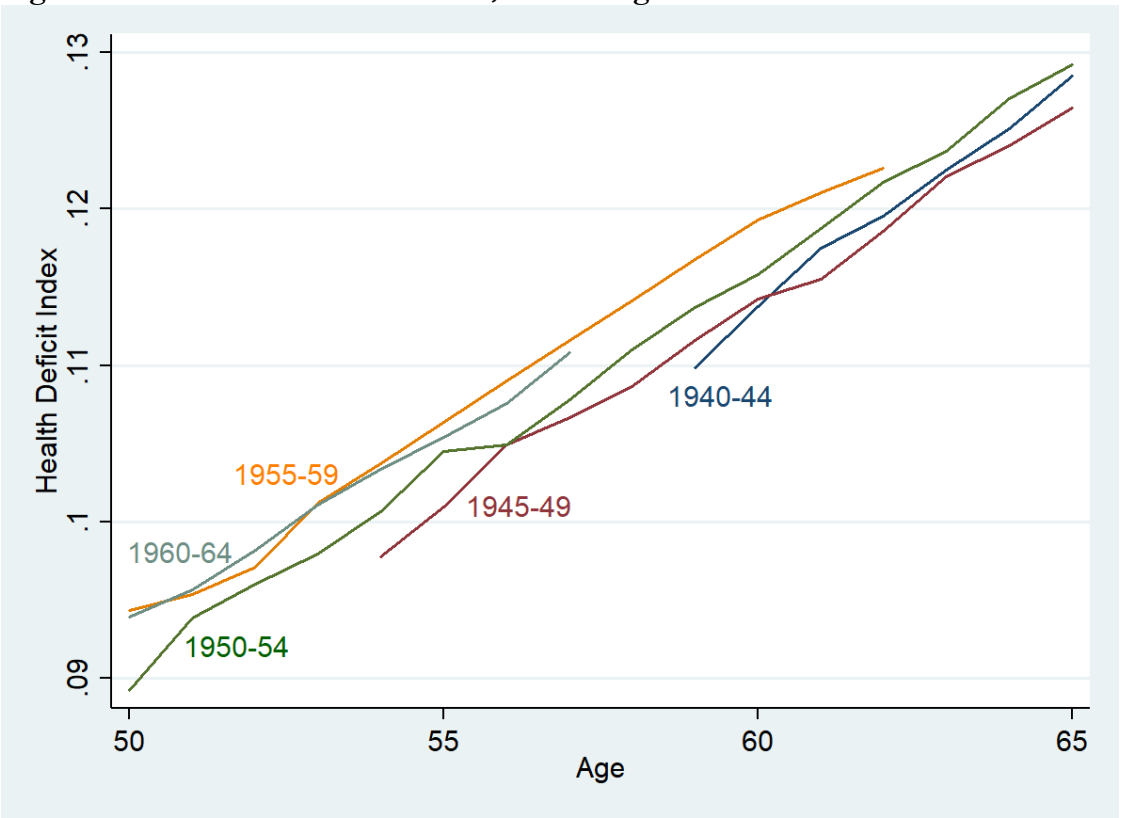
## 3.1 Basic descriptive findings

Figure 1 shows the smoothed age profiles of the MEA health deficit index by cohort, averaged over the 9 countries in our sample, for individuals of age 50-64.[5] Because SHARE data is collected only since 2004, we cannot observe the entire age span for all cohorts. The youngest included cohorts (1960-64) contain only relatively young individuals, while the individuals from the oldest cohorts (1940-44) cannot be younger than 59 years. Thus, we cannot compare these cohorts to each other without additional assumptions, in this case the identifying assumption that period (time) effects are zero.[6] However, even if we restrict ourselves to comparing only overlapping cohorts, the younger cohorts have more health deficits than the oldest cohort, and certain older cohorts are healthier than the subsequent cohorts. Generally, there seems not to be much of a difference between the younger cohorts, with the 1955-59 cohorts standing out as the cohorts with the highest health deficit index (however, the subsequent 1960-64 cohorts show are on a very similar level). Considering the very narrow scale on the vertical axis, the difference across cohorts seems not to be very large between most of them.

[5] In order to smooth the lines, we ran regressions of health on age and included cohort-dummies and country-dummies. We then predicted the health deficit index for individuals and took the average over countries to present them together in one graph.

[6] This assumption can be justified by the fact that population health is changing only very slowly except for pandemics or sudden jumps in medical technology. We subsume the slow and steady improvement of medical technology as a cohort effect.

**Figure 1: MEA Health Deficit Index, Middle Age 50-65.**

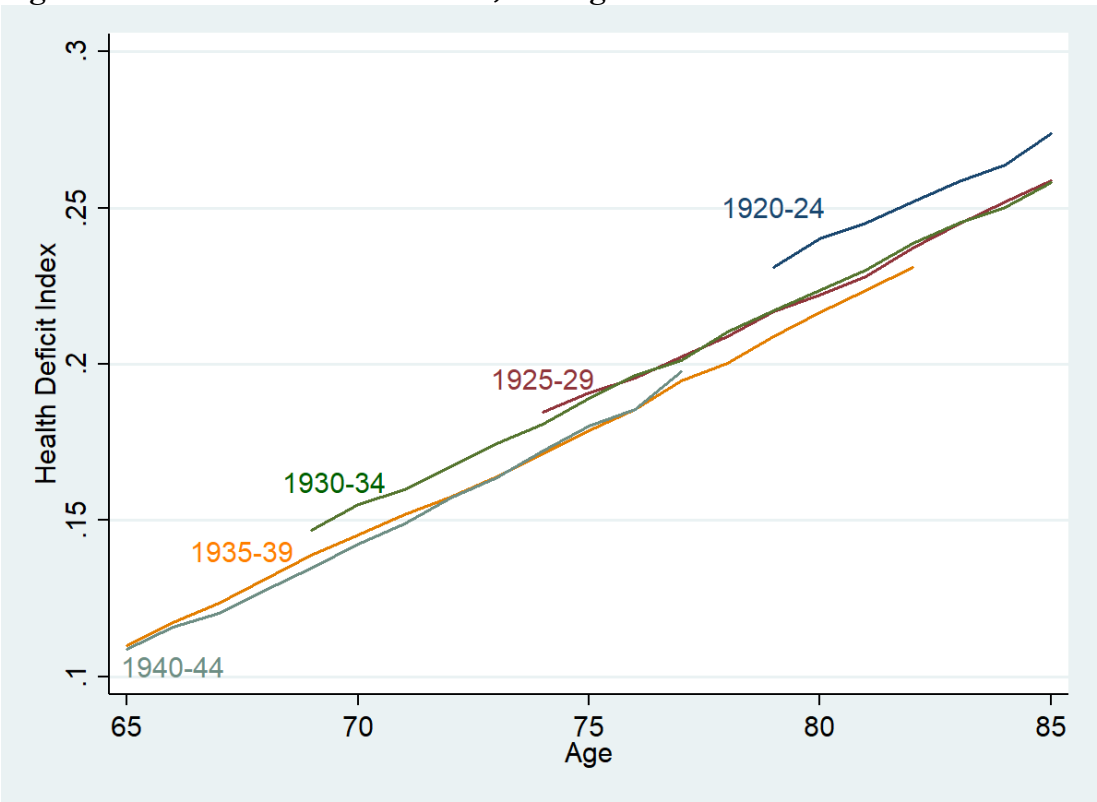



Source: SHARE Waves 1-7

The findings of Figure 1 contradict the folklore in Europe and earlier scientific studies which claim that medical progress keeps improving health in Europe. Abeliansky and Strulik (2019) find an improvement of health over the entire age range of 50-85. They do not, however, stratify by middle- and older ages.

This is in stark contrast to the trends in older ages (Figure 2). Among the older individuals, the younger the cohort, the less health deficits individuals have at a specific age. This is now in line with the findings of Abeliansky and Strulik (2019). It suggests that much of the recent improvement in health happened at a relatively old age, while individuals in working age were either unaffected or even worse off.

**Figure 2: MEA Health Deficit Index, Old Age 65-85.**




Source: SHARE Waves 1-7

### 3.2 Regression analyses

The graphs in Figures 1 and 2 provide suggestive descriptive evidence. However, one should be cautious interpreting these results, as we are comparing different cohorts with only partially overlapping observation periods. Moreover, the scales on the vertical axes are different, meaning that although differences across cohorts may appear smaller in Figure 2 than in Figure 1, they can actually be larger. Most important, however, is the fact that descriptive graphs do not allow to make inference, i.e. we cannot state whether the observed cohort differences in health are statistically significant or not.

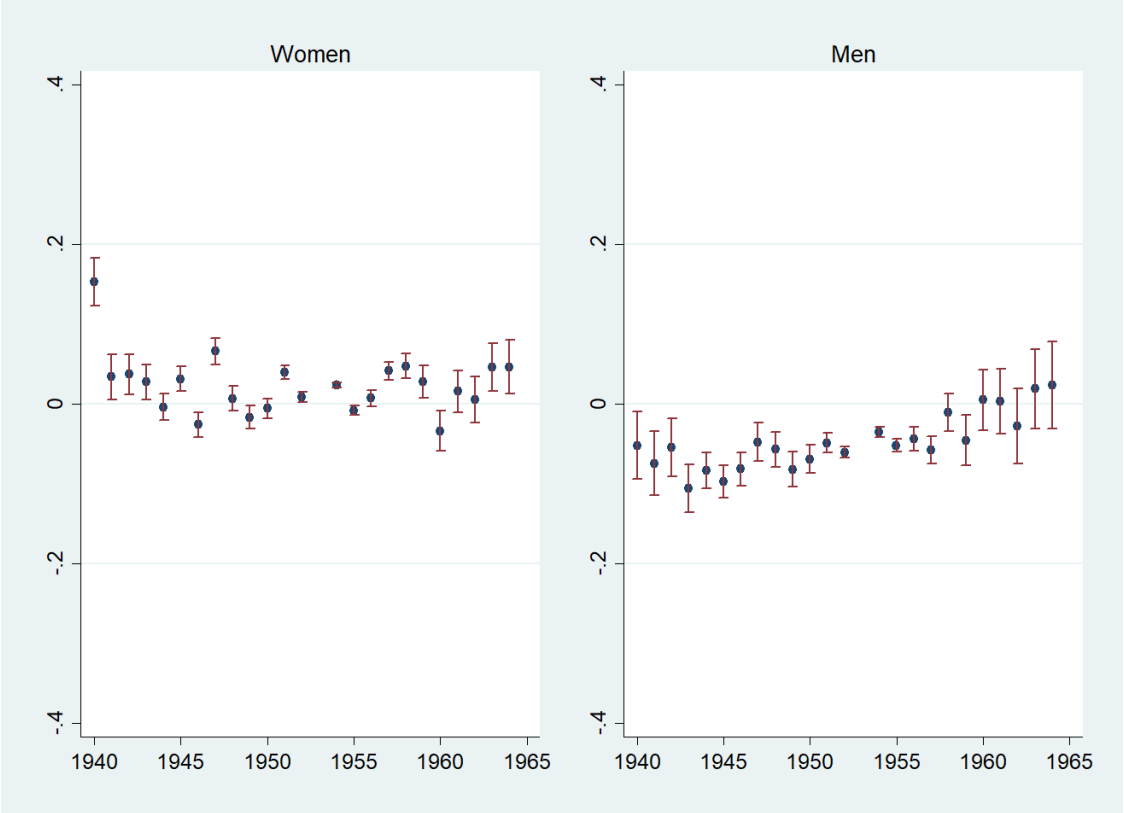
We therefore provide a more formal analysis by running regressions of the health deficit index on the year of birth, holding age constant. The identifying assumption is as before the absence of period effects. Year-of-birth effects are parametrized as fixed effects which allows us to present the corresponding coefficients in a graph. Since the health deficit index has a skewed empirical distribution, we use a log-linear relationship.

More specifically, we use the following regression models:

$$\ln(Health\ Deficit\ Index_i) = r + \alpha * age_i + \sum_{t=1}^{T-1} \gamma_t * yrbirth_{it} + \epsilon_i \qquad (2)$$

The actual estimation equations also include country fixed effects. We estimate the models separately by gender as we found large differences between women and men, and also present results stratified by educational background and wealth. Regression results including the coefficients of the year-of-birth dummies are relegated to Tables A.2 – A.6 in the appendix. Figures 3 to 7 present the coefficients of the year-of-birth dummies graphically since this provides a more intuitive interpretation. The omitted year of birth is always 1953.

**Figure 3: MEA Health Deficit Index, Age 50-64 – Women and Men**




Source: SHARE Waves 1-7

The left panel of Figure 3 shows the cohort coefficients for women. There seems to be no relationship between the year of birth and the health deficit. Compared to women born in 1953, those born in 1941 have a 3.4% higher health deficit index while also those born in 1964 have

a 4.7% higher index. The difference between the 1941 and the 1964 cohort is not statistically significant after performing a Wald test.[7]

The right panel of Figure 3 shows the cohort coefficients for men. Interestingly, in contrast to women there is a somewhat clearer trend observable: health deficits stay relatively constant across cohorts for males born until 1957. After that, there appears to be a slightly positive trend which would imply that the most recent cohorts face more health deficits. While men who were born in 1941 have a 7.2% lower health deficit index than those born in 1953, the 1964 has a 2.4% higher health deficit index than the 1953 cohort. This difference is statistically significant on the 5% level.

Figures 4 and 5 show differences by educational background for women and men respectively. For women with less education (i.e. less than median years of education, where medians are calculated separately by country, sex, interview year and cohort) a relatively constant trend for most cohorts can be observed. However, for the most recent cohorts there appears to be an improvement in health. For women with more education a slightly positive trend can be inferred, meaning that more recent cohorts face higher health deficits. Note that the mean is different between the two groups: the mean health deficit index is 0.113 for women with more education and 0.14 for those with less education. Hence, the difference between women of different educational background seems to decrease. Relative to the 1953 cohort, women of low education born in 1942 have an 10.4% higher index while those born in 1964 face an 7.5% higher index. The difference between these values is not statistically significant. This is different for more educated women: The health deficit index is 9.5% lower for women born in 1942 but 1.7% higher for those born in 1963 (both compared to those born in 1953). The difference is statistically significant at the 5% level.

Figure 5 suggests different results for the male sample. We observe that less educated individuals are becoming unhealthier if they were born later and that the effect on the more educated individuals seems to be, if any, only slightly positive. The mean health deficit index is 0.085 for men with more education and 0.106 for those with less education. Hence, for men we first find that the less educated are becoming unhealthier and second, the difference to the more educated is increasing. In terms of percentage changes, less educated men have a 11.8% lower deficit index if they were born in 1943 while it is 8.3% larger if they were born in 1964. The difference

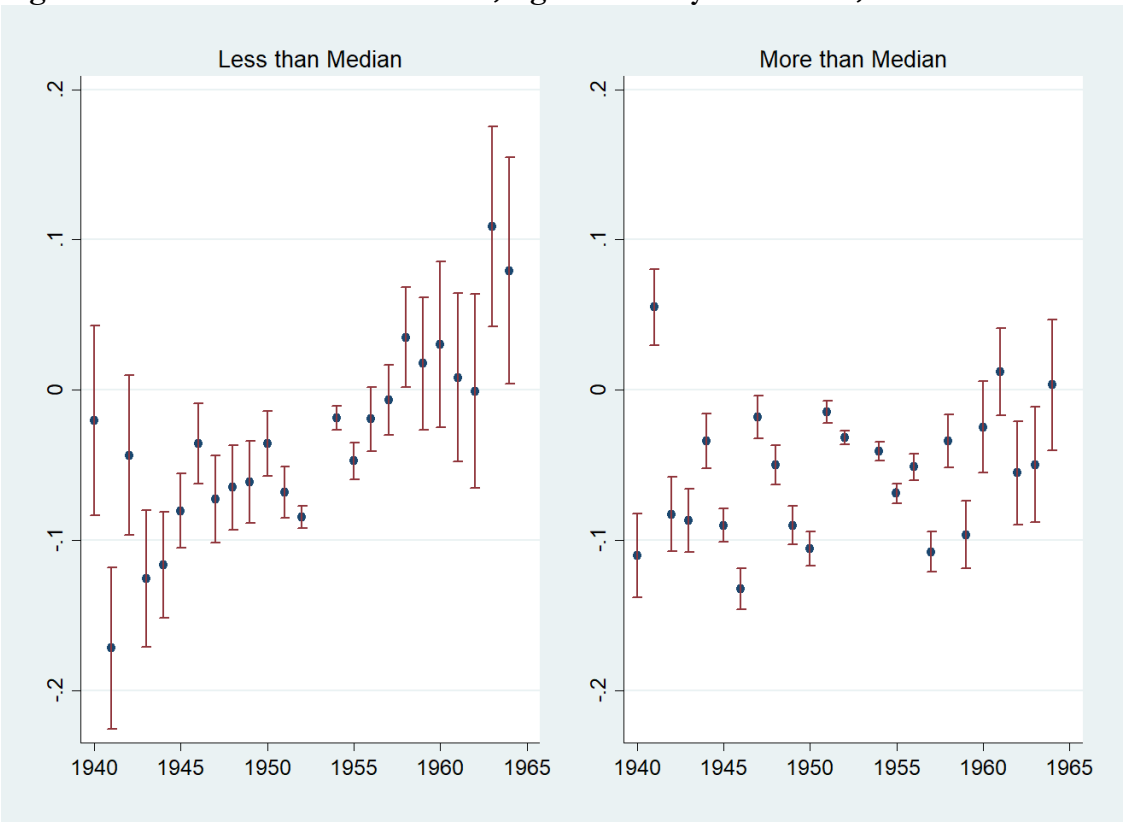
[7] We use 1941 rather than 1940, the first available cohort, because the coefficient on the 1940 cohort seems to be an outlier. We proceed like this whenever the coefficient of the youngest oldest cohort is very different from the others.

is statistically significant at the 0.1% level. For highly educated men, no such a difference is found.

**Figure 4: MEA Health Deficit Index, Age 50-64 – by Education, Women**


Source: SHARE Waves 1-7

**Figure 5: MEA Health Deficit Index, Age 50-64 – by Education, Men**




Source: SHARE Waves 1-7

Finally, Figures 6 and 7 report the role of wealth. The sample is split by median household total net worth, where medians are calculated separately by country, sex, interview year and cohort. Women with low household wealth show no noticeable relationship between the health deficit index and the year of birth. The coefficients are dispersed around zero and thus the health deficit index seems not to systematically differ from that in the base year 1953. For women with more household net worth, however, there might be a negative trend. Women born earlier have a higher health deficit index than those born in 1953, while those born afterwards have somewhat less deficits. Again, after conditioning by gender and household wealth, the confidence intervals are quite large and the result should be interpreted with caution. The mean health deficit index equals 0.109 for wealthier women and 0.146 for those with less wealth. Thus, the role of wealth seems to become more important. Women of low household net worth have 2.7% more health deficits if they were born in 1941 and women born in 1964 have 5.6% more health deficits than women of the same age born in 1953. The difference is not statistically significant. Above median household net worth, women have 4.3% more health deficits as they were born in 1941 while they have 3.9% more health deficits if they were born in 1964. Again, this is not statistically significant.

For men, Figure 7 suggests that there are neither statistically significant health improvements nor declines over time for wealthier men. If any, a slightly negative trend might be observed, implying that wealthier men would become healthier as they were born later. For males with less household wealth, in turn, a very strong positive relationship between year of birth and health deficits appears to be the case for more recent cohorts. The mean health deficit index equals 0.083 for wealthier men and 0.11 for those with less wealth. Thus, the difference between wealthy and less wealthy men might be increasing as males were born later. The quite clear trend observed for less wealthy men can be also seen when looking at the percentage changes. Men born in 1941 have 11.2% less deficits while those born in 1964 have 4.6% more deficits. This remarkable difference is statistically significant at the 0.1% level. For wealthier men, no such difference is observed.

**Figure 6: MEA Health Deficit Index, Age 50-64 – by Wealth, Women**


Source: SHARE Waves 1-7

**Figure 7: MEA Health Deficit Index, Age 50-64 – by Wealth, Men**


Source: SHARE Waves 1-7

Regression analysis can also provide an answer to the question, which health deficits improved and which deteriorated from older to younger cohorts. We ran probit regressions of each binary health deficit item on age and cohort (entering linearly, not as dummies). Detailed results are relegated to Table A.7 in the appendix. A positive coefficient of the cohort variable indicates that the health issue described by the item has become more prevalent for younger cohorts. The results can be summarized as follows: Most of the measures of functional health (ADLs and IADLs, mobility) either improved or did not change. Among the diagnosed illnesses ("has a doctor ever told you") heart attacks, cancers (excluding lung cancer) and hypertension feature a lower prevalence for younger cohorts; only lung diseases (including lung cancer) increased. Mental health issues (such as depression, sleeping problems, irritability, fatigue) however became more prevalent for the younger cohorts, as did symptoms which may be related to mental health problems (falls, fear of falls, dizziness, faints).

# 4 Employment trends of the middle aged in Europe and their relation to health

The second part of this paper addresses the question whether employment of middle-aged individuals faces a declining trend similar to that in the US. It then links both parts of the paper by discussing whether health trends have predictive value for labor force participation trends in Europe.

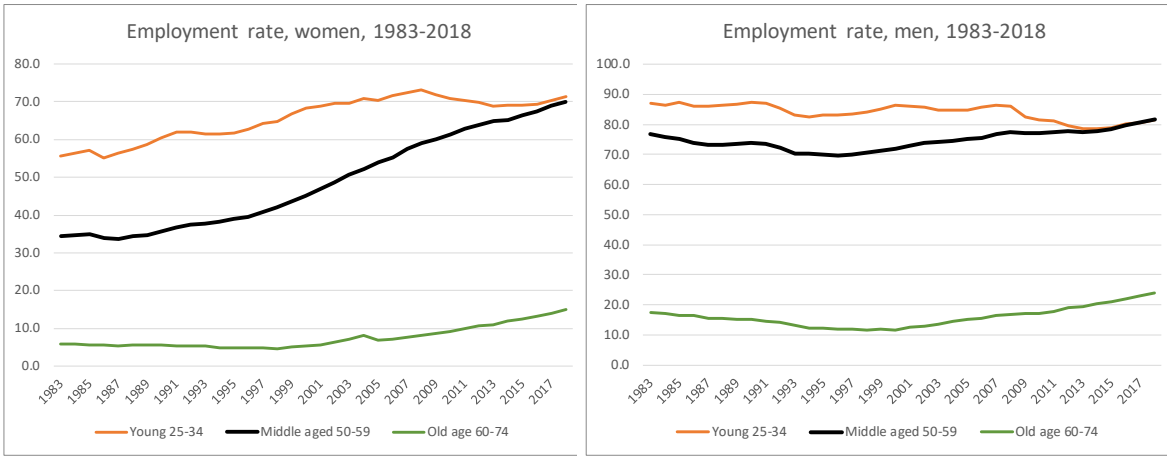
## 4.1 Description of employment trends by age, cohort and country

Employment of older individuals in Europe declined steadily throughout the 20th century until the late 1990s. Long ago in 1900, labor force participation at 65 was well above 50% in Britain, Germany and France, while in 1995 it was as low as 4% in Germany, 5% in France, and 15% in Britain (Coile, Milligan, & Wise, 2016; Costa, 1998). One reason for this secular development were of course the introduction of public pension programs that permitted retirement without the risk of poverty. Starting from the '70s in many countries early retirement and disability programs allowed even middle-aged workers to leave the labor force (Gruber and Wise 1999, Börsch-Supan and Schnabel, 1998).

These trends were reverted since the late 1990s. Employment of older individuals increased since the late 1990s until now, with growth rates varying between 6.4% in Sweden to 26.1% in the Netherlands (Coile et al., 2016). Growth rates were almost twice as big for women. Main reasons are the corresponding reversal of public pension policies in Europe, as emphasized in the introduction, and the secular trend in female labor force participation.

Figure 8 shows the resulting U-shaped pattern for older men and strongly increasing pattern for older women. "Old" is defined in accordance with the Eurostat data (age 60-74). The data is for all eight EU countries in our country sample described in Section 2.

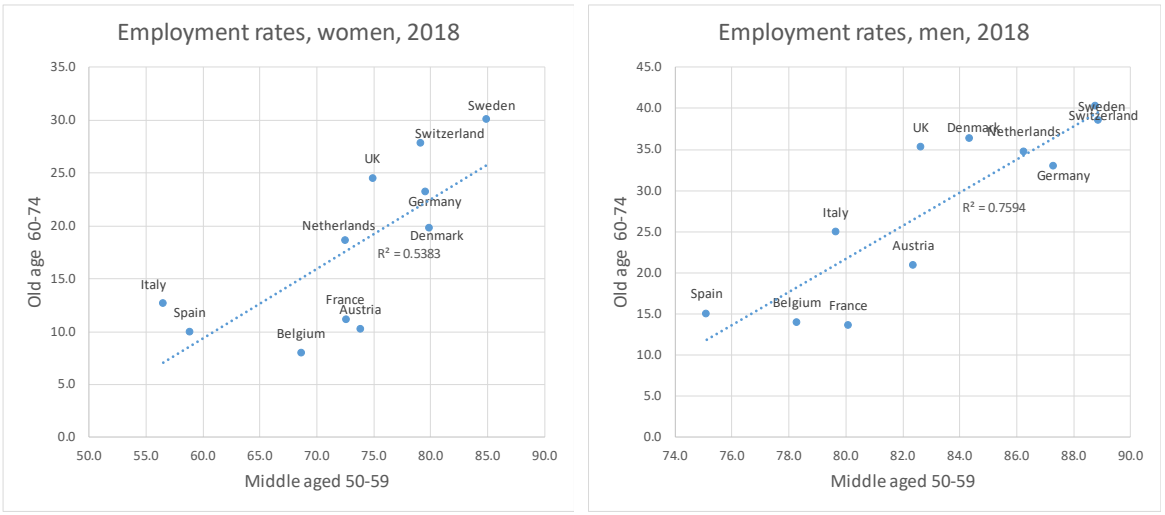
**Figure 8: Employment rates for three age bands, 1983-2018**




Source: Eurostat, excludes Switzerland where data is only available after 1996.

Figure 8 also shows the effect of the 2008 financial crisis on youth employment (age 25-34). Most importantly for this paper, however, is the uninterrupted increase of middle-aged employment (age 45-54) since the late 1980s for women and about 1996 for men. Neither has the strong increase in old-age employment been accompanied by a decline in middle-aged employment, nor has the Great Recession made a substantial dent in middle-aged employment. This pattern is thus in stark contrast to the corresponding trends in the US (Burtless, this volume). Employment rates of the middle-aged and of older individuals are strongly positively correlated both across countries (Figure 9, $R^2$=76% for men and $R^2$=54% for women) and over time (Figure 8) as opposed to the US where Burtless observes a negative correlation.

**Figure 9: Employment rates of middle-aged vs. older individuals by country, 2018**




Source: Eurostat

To study the cohort tends in more detail and separately for each country, we converted the Eurostat employment data for each country into a pseudo-panel by age and cohort. Figure 10

presents the results. For men (upper panel), none of the cohort differences is significant. If there is an observable trend at all, it is negative in Italy and Spain, probably reflecting the effects of the financial crisis, and positive in the Netherlands, Sweden and the UK. For women, there are large differences all pointing to higher employment rates for middle-aged women as compared to older cohorts.

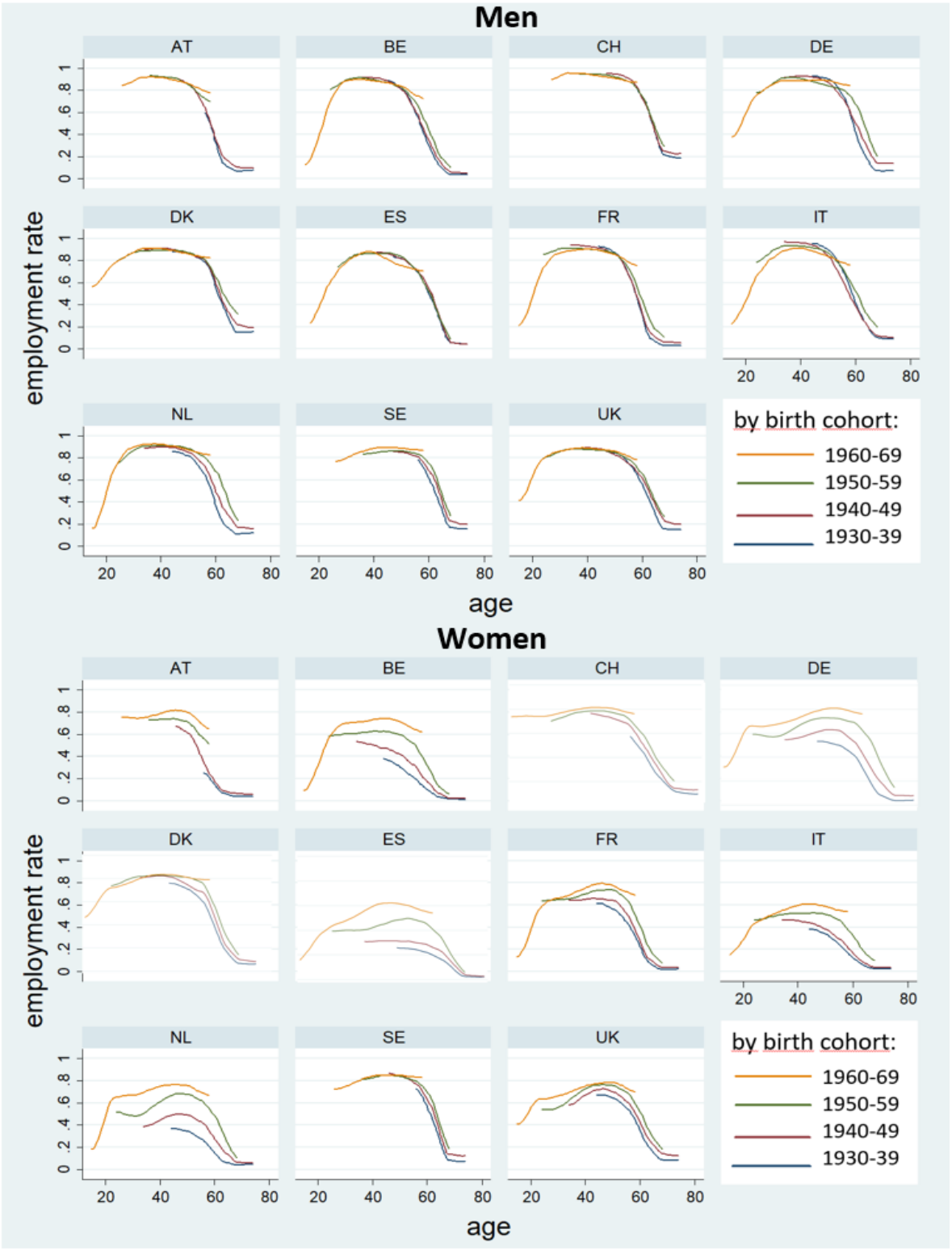
### 4.2 The link between health and employment

When we compare the health trends in Section 3 with the employment trends in the previous subsection, it is evident that there is no correlation between health and employment trends. This is in strong contrast to the findings for the US in this volume.

That health has little predictive power for the development of employment over time in recent Europe is not a new insight. The work by the "International Social Security Project" provided evidence that goes against any significant correlation between health and labor force participation at ages 50-64 in Europe. Disability insurance in Europe used to be a major pathway to early retirement in Europe. The country-specific articles in Wise (2012) relate the uptake of disability insurance in Europe to health. Taken together, they finds no correlation between early retirement and health but a strong relation between early retirement and the generosity of disability benefits. Coile et al. (2016) show that while health is a significant determinant of labor force participation in a cross-section within each country, health neither explains the cross-national differences in old-age labor force participation nor its trajectory over time. The U-shaped development of old and middle-aged employment visible in Figure 8 for men can be well explained by the change of incentives (Börsch-Supan and Coile, 2019 and forthcoming) but not by health and similar slow moving determinants considered by Coile et al. (2016).

The country chapters in Wise (2017) use SHARE microdata comparable to the one we use in Section 3 to investigate the relation between health and employment. The authors first regress an employment dummy on a health index a la Poterba, Venti, and Wise (2013) and other regressors on a sample of 50 to 54 years old respondents. They then use the estimated model to predict employment rates at 55 to 59 given the observed health conditions in the sample. This yields a counterfactual employment rate that would prevail if health deteriorates with age as it actually does. In all countries, the actual share working is much smaller than predicted. The authors conclude that there are numerous reasons for retiring early, and poor health may be one of them, but cannot be the main reason. In other words, the correlation between health and labor force participation is at most weak for individuals of age 55-59 in Europe.

**Figure 10: Employment rates by age and year of birth**




Source: Eurostat

## 5 Conclusions

We used European microdata from SHARE to study the evolution of health and employment of middle-aged individuals over time. While health in Europe improved between 2004 to 2018 for older cohorts, we find the opposite for younger cohorts: Later cohorts of now middle-aged individuals experienced a stalling health trend relative to earlier cohorts, in particular for educated men. In this respect, Europe seems to experience the same developments as they plague the US. Most of the health deficits which have increased during our sample period refer to mental health issues (such as depression, sleeping problems, irritability, fatigue) or could be related to mental health problems (falls, fear of falls, dizziness, faints) while life-threatening illnesses (such as heart attacks, cancers and hypertension) feature a lower prevalence for younger cohorts.

In terms of employment, however, Europe is different – so far. We do not find any sign that employment rates of middle-aged individuals are stagnating or even falling. In contrary, employment has increased steadily since the late 1990s.

We thus do not find any correlation between health and employment trends. This is in line with the work by the International Social Security Project which shows that, while bad health is a predictor for detachment from the labor force within each country, neither trends over time nor cross-national differences in labor force participation across Europe can be explained by health.

It is of course too early to conclude what implications the stalling health trend of the middle-aged cohorts have for old-age labor force participation in 10-15 years from now, i.e., whether Europe will experience a revival of early retirement in the years to come. Relative to the US, the health advantage of Europeans appears still large, and the worsening health conditions among middle-aged European less severe than that of their US peers.

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# Appendix A – Tables

**Table A.1: Summary Statistics, Wave 1-7 and Core Countries**

| | N | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| **Females** | | | | | |
| Health Deficit Index | 41,962 | 0.125 | 0.098 | 0 | 0.82 |
| Log Health Deficit Index | 41,565 | -2.36 | 0.803 | -5.318 | -0.198 |
| Age | 42,082 | 57.47 | 4.18 | 50 | 64 |
| Year of Birth | 42,082 | 1953 | 5.3 | 1940 | 1964 |
| Years of Education | 42,082 | 11.3 | 4.353 | 0 | 25 |
| **Males** | | | | | |
| Health Deficit Index | 33,712 | 0.095 | 0.085 | 07 | 0.87 |
| Log Health Deficit Index | 33,262 | -2.67 | 0.841 | -5.318 | -0.1393 |
| Age | 33,837 | 57.77 | 4.114 | 50 | 64 |
| Year of Birth | 33,837 | 1953 | 5.2 | 1940 | 1964 |
| Years of Education | 33,837 | 11.8 | 4.444 | 0 | 25 |

In this Table we show summary statistics for Waves 1, 2, 4, 5, 6 and 7 of SHARE. Countries included are: Austria, Belgium, Denmark, France, Germany, Italy, Spain, Sweden, and Switzerland.

**Table A.2: Regression Results, Women and Men**

| | Age | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 | 1949 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Women** | 0.0151*** | 0.153*** | 0.0337** | 0.0368*** | 0.0272** | -0.00392 | 0.0312*** | -0.0263*** | 0.0657*** | 0.00659 | -0.0168** |
| | (11.63) | (9.91) | (2.34) | (2.88) | (2.48) | (-0.45) | (3.90) | (-3.36) | (7.65) | (0.82) | (-2.23) |
| **Men** | 0.0178*** | -0.0523** | -0.0747*** | -0.0545*** | -0.106*** | -0.0836*** | -0.0975*** | -0.0819*** | -0.0479*** | -0.0572*** | -0.0822*** |
| | (10.21) | (-2.43) | (-3.64) | (-2.94) | (-6.92) | (-7.25) | (-9.63) | (-7.60) | (-3.93) | (-5.09) | (-7.34) |

| | | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Women** | | -0.00593 | 0.0398*** | 0.00818** | B | 0.0232*** | -0.00839*** | 0.00687 | 0.0411*** | 0.0471*** | 0.0278*** |
| | | (-0.96) | (9.14) | (2.49) | B | (14.15) | (-2.78) | (1.38) | (7.26) | (6.01) | (2.70) |
| **Men** | | -0.0692*** | -0.0489*** | -0.0608*** | B | -0.0352*** | -0.0521*** | -0.0440*** | -0.0583*** | -0.0112 | -0.0458*** |
| | | (-7.61) | (-7.87) | (-17.93) | B | (-11.17) | (-12.04) | (-5.79) | (-6.74) | (-0.93) | (-2.86) |

| | | 1960 | 1961 | 1962 | 1963 | 1964 | Constant | N |
|---|---|---|---|---|---|---|---|---|
| **Women** | | -0.0339*** | 0.0155 | 0.00545 | 0.0455*** | 0.0463*** | -3.965*** | 41,565 |
| | | (-2.69) | (1.17) | (0.37) | (3.00) | (2.70) | (-29.99) | |
| **Men** | | 0.00510 | 0.00316 | -0.0279 | 0.0187 | 0.0237 | -4.003*** | 33,262 |
| | | (0.26) | (0.15) | (-1.15) | (0.74) | (0.85) | (-19.62) | |

*t* statistics in parentheses
$^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$
Waves 1-7, Core Countries

**Table A.3: Regression Results by Wealth, Women**

| | Age | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 | 1949 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | 0.0167*** | 0.130*** | 0.0263* | 0.0348** | -0.00469 | -0.0556*** | 0.0226*** | -0.0319*** | 0.0562*** | 0.000384 | -0.0355*** |
| | (7.91) | (7.56) | (1.81) | (2.50) | (-0.37) | (-5.79) | (2.91) | (-4.31) | (7.02) | (0.05) | (-5.26) |
| **Above Median Wealth** | 0.0128*** | 0.162*** | 0.0417** | 0.00605 | 0.0664*** | 0.0561*** | 0.0342*** | -0.0137 | 0.0828*** | 0.00847 | 0.00351 |
| | (5.86) | (6.66) | (1.98) | (0.30) | (3.82) | (4.09) | (3.49) | (-1.22) | (7.00) | (0.70) | (0.34) |

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | -0.00165 | 0.0163*** | -0.0226*** | B | 0.0196*** | -0.0147*** | 0.0246*** | 0.0263*** | 0.0432*** | 0.0147 |
| | (-0.27) | (3.75) | (-8.21) | B | (7.80) | (-4.21) | (4.44) | (4.08) | (4.78) | (1.25) |
| **Above Median Wealth** | -0.0112 | 0.0350*** | 0.0320*** | B | 0.0209*** | -0.0111** | 0.000693 | 0.0398*** | 0.0372*** | 0.0257 |
| | (-1.25) | (5.22) | (6.69) | B | (8.77) | (-2.36) | (0.08) | (4.27) | (2.90) | (1.47) |

| | 1960 | 1961 | 1962 | 1963 | 1964 | Constant | N |
|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | -0.0424*** | 0.0260* | 0.0449*** | 0.0328* | 0.0540*** | -3.849*** | 21,097 |
| | (-2.87) | (1.77) | (2.76) | (1.90) | (2.80) | (-22.86) | |
| **Above Median Wealth** | -0.0348* | -0.000745 | -0.0246 | 0.0516** | 0.0386 | -4.168*** | 20,468 |
| | (-1.67) | (-0.03) | (-0.96) | (1.99) | (1.36) | (-18.73) | |

*t* statistics in parentheses
$^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$
Waves 1-7, Core Countries

**Table A.4: Regression Results by Wealth, Men**

| | Age | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 | 1949 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | 0.0207*** | -0.0486* | -0.118*** | -0.0864*** | -0.103*** | -0.143*** | -0.124*** | -0.124*** | -0.0412*** | -0.0952*** | -0.0774*** |
| | (7.26) | (-1.88) | (-5.59) | (-4.02) | (-5.69) | (-10.35) | (-13.05) | (-11.60) | (-3.50) | (-8.56) | (-7.21) |
| **Above Median Wealth** | 0.0140*** | -0.0777*** | -0.0396 | -0.0543** | -0.126*** | -0.0540*** | -0.0929*** | -0.0439*** | -0.0621*** | -0.0512*** | -0.0874*** |
| | (5.51) | (-2.65) | (-1.58) | (-2.16) | (-5.94) | (-3.47) | (-8.51) | (-3.45) | (-4.42) | (-3.64) | (-6.72) |

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | -0.0798*** | -0.108*** | -0.103*** | B | -0.0180*** | -0.0642*** | -0.0551*** | -0.0347*** | 0.0430*** | 0.0130 |
| | (-8.93) | (-16.27) | (-33.36) | B | (-4.47) | (-14.50) | (-6.22) | (-3.30) | (3.01) | (0.68) |
| **Above Median Wealth** | -0.0758*** | -0.0233*** | -0.0291*** | B | -0.0643*** | -0.0500*** | -0.0353*** | -0.0883*** | -0.0440*** | -0.0987*** |
| | (-6.85) | (-2.92) | (-7.00) | B | (-16.71) | (-8.20) | (-3.41) | (-7.41) | (-2.58) | (-4.40) |

| | 1960 | 1961 | 1962 | 1963 | 1964 | Constant | N |
|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | 0.0674*** | 0.0798*** | 0.0487* | 0.0873*** | 0.0454 | -4.228*** | 16,942 |
| | (2.84) | (3.31) | (1.75) | (2.90) | (1.37) | (-16.62) | |
| **Above Median Wealth** | -0.0539** | -0.0723** | -0.0861** | -0.0355 | 0.0188 | -3.920*** | 16,320 |
| | (-1.98) | (-2.34) | (-2.39) | (-1.02) | (0.48) | (-13.30) | |

*t* statistics in parentheses
$^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$
Waves 1-7, Core Countries

**Table A.5: Regression Results by Education, Women**

| | Age | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 | 1949 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | 0.0159*** | 0.135*** | 0.0324** | 0.0994*** | 0.107*** | 0.0402*** | 0.0879*** | 0.0354*** | 0.108*** | 0.0573*** | 0.0415*** |
| | (9.36) | (8.25) | (2.31) | (7.43) | (9.40) | (4.56) | (12.25) | (4.98) | (13.96) | (7.60) | (5.91) |
| **Above Median Wealth** | 0.0154*** | 0.146*** | 0.00854 | -0.100*** | -0.106*** | -0.0628*** | -0.0700*** | -0.109*** | 0.0260** | -0.0655*** | -0.0806*** |
| | (8.48) | (5.37) | (0.36) | (-4.59) | (-5.68) | (-4.13) | (-6.26) | (-9.35) | (2.10) | (-5.21) | (-7.63) |

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | 0.0310*** | 0.0808*** | 0.0911*** | B | 0.0974*** | 0.00898*** | 0.0713*** | 0.128*** | 0.123*** | 0.0979*** |
| | (5.60) | (19.08) | (26.22) | B | (45.56) | (3.40) | (16.07) | (26.15) | (16.60) | (10.16) |
| **Above Median Wealth** | -0.0686*** | -0.0127** | -0.0794*** | B | -0.0559*** | -0.0130** | -0.0477*** | -0.0427*** | -0.0419*** | -0.0188 |
| | (-7.17) | (-2.07) | (-17.16) | B | (-18.80) | (-2.13) | (-4.75) | (-3.68) | (-2.78) | (-0.96) |

| | 1960 | 1961 | 1962 | 1963 | 1964 | Constant | N |
|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | 0.0385*** | 0.0764*** | 0.0288** | 0.0975*** | 0.0725*** | -4.066*** | 23,944 |
| | (3.20) | (6.20) | (2.15) | (6.83) | (4.40) | (-28.82) | |
| **Above Median Wealth** | -0.0751*** | -0.0330 | 0.00882 | 0.0168 | 0.0596* | -4.096*** | 17,621 |
| | (-3.10) | (-1.30) | (0.30) | (0.56) | (1.78) | (-16.56) | |

*t* statistics in parentheses
$^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$
Waves 1-7, Core Countries

**Table A.6: Regression Results by Education, Men**

| | Age | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 | 1949 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | 0.0187*** | -0.0203 | -0.172*** | -0.0435 | -0.126*** | -0.117*** | -0.0806*** | -0.0359*** | -0.0726*** | -0.0650*** | -0.0615*** |
| | (8.92) | (-0.63) | (-6.25) | (-1.60) | (-5.41) | (-6.51) | (-6.38) | (-2.63) | (-4.89) | (-4.49) | (-4.42) |
| **Above Median Wealth** | 0.0153*** | -0.110*** | 0.0551*** | -0.0828*** | -0.0870*** | -0.0343*** | -0.0902*** | -0.132*** | -0.0179** | -0.0499*** | -0.0901*** |
| | (6.75) | (-7.72) | (4.29) | (-6.53) | (-8.16) | (-3.69) | (-15.74) | (-18.94) | (-2.46) | (-7.46) | (-13.65) |

| | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | -0.0357*** | -0.0679*** | -0.0846*** | B | -0.0186*** | -0.0474*** | -0.0195* | -0.00673 | 0.0351** | 0.0175 |
| | (-3.24) | (-7.79) | (-22.18) | B | (-4.70) | (-7.55) | (-1.79) | (-0.56) | (2.05) | (0.78) |
| **Above Median Wealth** | -0.106*** | -0.0147*** | -0.0318*** | B | -0.0408*** | -0.0690*** | -0.0513*** | -0.108*** | -0.0339*** | -0.0964*** |
| | (-18.59) | (-3.80) | (-14.32) | B | (-12.84) | (-20.50) | (-11.26) | (-16.01) | (-3.76) | (-8.42) |

| | 1960 | 1961 | 1962 | 1963 | 1964 | Constant | N |
|---|---|---|---|---|---|---|---|
| **Above Median Wealth** | 0.0303 | 0.00814 | -0.000777 | 0.109*** | 0.0795** | -4.157*** | 19,141 |
| | (1.08) | (0.28) | (-0.02) | (3.19) | (2.07) | (-13.87) | |
| **Above Median Wealth** | -0.0248 | 0.0120 | -0.0552*** | -0.0499** | 0.00339 | -4.037*** | 14,121 |
| | (-1.59) | (0.82) | (-3.14) | (-2.55) | (0.15) | (-23.75) | |

*t* statistics in parentheses
$^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$
Waves 1-7, Core Countries

**Table A.7: Cohort Improvement/Deterioration of Single Health Deficits**

| | Year of Birth |
|---|---|
| **Ever diagnosed by doctor** | |
| Heart attack | -0.0184*** |
| | (-9.62) |
| High blood pressure | 0.000613 |
| | (0.48) |
| Cholesterol | -0.00635*** |
| | (-4.63) |
| Stroke | -0.00426 |
| | (-1.53) |
| Diabetes | 0.00219 |
| | (1.25) |
| Chronic lung disease | 0.0104*** |
| | (4.88) |
| Cancer | -0.00768*** |
| | (-3.54) |
| Parkinson | -0.00811 |
| | (-1.32) |
| Cataracts | -0.00302 |
| | (-1.18) |
| Hip fracture or femoral fracture | -0.00807** |
| | (-2.18) |
| Doctor told you had: other | 0.00752*** |
| | (5.30) |
| **Mental Health Measures** | |
| Depression | 0.00365*** |
| | (2.97) |
| Suicidal feelings or wish to be dead in the last month | 0.00265 |
| | (1.34) |
| Trouble sleeping recently | 0.00316** |
| | (2.53) |
| Irritable recently | 0.0134*** |
| | (10.44) |
| Not enough energy in last month | 0.00555*** |
| | (4.41) |
| Unable to concentrate on entertainment | -0.00669*** |
| | (-4.10) |
| Unable to concentrate while reading | -0.00631*** |
| | (-4.01) |

**Table A.7: Cohort Improvement/Deterioration of Single Health Deficits, ctd.**

| | |
|---|---|
| Less enjoyment | -0.00812***<br>(-5.04) |
| **Instrumental Activities** | |
| Difficulties walking 100mt | 0.00116<br>(0.56) |
| Difficulties sitting long | -0.00919***<br>(-5.42) |
| Difficulties getting out chair | -0.00808***<br>(-5.29) |
| Difficulties climbing one flight of stairs | 0.00211<br>(1.07) |
| Difficulties kneeing | -0.00354***<br>(-2.60) |
| Difficulties extending arms | 0.00303<br>(1.61) |
| Difficulties pulling/pushing object | -0.00515***<br>(-2.86) |
| Difficulties lifting 5kg | -0.00560***<br>(-3.58) |
| Difficulties picking an object | 0.00260<br>(0.96) |
| Difficulties dressing | 0.000727<br>(0.34) |
| Walking across a room | 0.00616<br>(1.53) |
| Difficulties bathing | 0.00213<br>(0.77) |
| Difficulties eating | 0.00449<br>(1.16) |
| Difficulties getting out of bed | 0.00411<br>(1.45) |
| Difficulties using the toilet | 0.00297<br>(0.81) |
| Difficulties using map | -0.0154***<br>(-6.55) |
| Difficulties preparing a hot meal | 0.00295<br>(0.86) |

**Table A.7: Cohort Improvement/Deterioration of Single Health Deficits, ctd.**

| | |
|---|---|
| Difficulties shopping | 0.00417 |
| | (1.53) |
| Difficulties with telephone calls | -0.00809* |
| | (-1.87) |
| Difficulties taking medications | 0.00547 |
| | (1.21) |
| Difficulties doing housework | 0.00694*** |
| | (3.50) |
| Difficulties managing money | 0.00169 |
| | (0.52) |
| **Others** | |
| Difficulties joining activities | 0.000935 |
| | (0.76) |
| Difficulties seeing across street | -0.00509*** |
| | (-3.89) |
| Difficulties seeing arm length | -0.0133*** |
| | (-9.66) |
| Hearing aid | 0.0198*** |
| | (6.98) |
| Falling down | 0.0252*** |
| | (10.02) |
| Fear of falling down | 0.0170*** |
| | (8.05) |
| Dizziness, faints or blackouts | 0.0119*** |
| | (6.70) |
| BMI | -0.00225* |
| | (-1.85) |
| Grip strength | -0.000791 |
| | (-0.48) |
| Mobility | -0.0122*** |
| | (-9.99) |

*t* statistics in parentheses
$^{*}$ $p < 0.1$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$
Waves 1-7, Core Countries

## Appendix B - Codebook

dn003 — Year of birth

int_year — Interview year

coh_5_d1 - _d7 — Cohort dummies, 5 year groups

| | | | |
|---|---|---|---|
| 1 | 1940 | – | 1944 |
| 3 | 1945 | – | 1949 |
| 4 | 1950 | – | 1959 |
| 5 | 1955 | – | 1959 |
| 6 | 1960 – 1964 | | |

educ — Level of education based on isced1997_r (ISCED-97 coding of education). The variable uses a rounded average of the five imputation models in gv_imputations, if the individuals level of education was imputed.

1 isced1997 categories 0, 1 or 2: pre-primary, primary and lower-secondary education.

2 isced1997 categories 3 or 4: Upper secondary, and post-secondary, non-tertiary education.

3 isced1997 categories 5 or 6: First and second stage of tertiary education.

yedu — Years of education, based on imputed variables taken from gv_imputations. In wave 1, this was not based on a question, but is derived from the ISCED-97 classification.

hnetw — Household net worth, used from gv_imputed dataset. Uses the mean of the five different imputations of household net worth.

wealth_terc — Terciles of household net worth, created by splitting hnetw into terciles by country and int_year

wealth_median — Indicator whether household net worth above or below median, by gender and country.

**Physical Health**

sphus — Self-perceived health (us version). Graphs show the share of individuals that answered "Excellent", "Very Good" or "Good".

| | | |
|---|---|---|
| 1 | Excellent | |
| 2 | Very | Good |
| 3 | Good | |
| 4 | Fair | |
| 5 | Poor | |

| | |
|---|---|
| adl | Number of activities of daily living the respondent has problems with.<br><br>Includes activities like: Walking 100 metres, sitting for two hours, getting up from a chair after sitting for long periods, climbing several flights of chairs without resting, climbing one flight of stairs without resting, stooping/kneeling/crouching, reaching or extending arms above shoulder level, pulling or pushing large objects, lifting or carrying weights over 5 kg, picking up a small coin from a table |
| adl2 | Dummy: At least one daily living activities limitations. |
| iadl | Limitations with Instrumental daily living activities because of physical, mental, emotional or memory problems that are expected to last longer than 3 months.<br><br>Includes: Dressing, including putting on shoes and socks, Walking across a room, Bathing or showering, Eating, such as cutting up your food, Getting in or out of bed, Using the toilet, including getting up or down, Using a map to figure out how to get around in a strange place, Preparing a hot meal, Shopping for groceries, Making telephone calls, Taking medications, Doing work around the house or garden, Managing money, such as paying bills and keeping track of expenses, Leaving the house independently and accessing transportation services, Doing personal laundry |
| iadl2 | Dummy: At least one instrumental daily living activities limitation. |
| chronic | Number of chronic diseases, using a rounded average of the mean of five different chronic disease imputations. It is important to note that the showcards of the "Has a doctor ever told you" question differ across waves, as some options were added. The gv_imputed chronic diseases variable was used to lower the potential concern that some individuals might have answered that they only have "other" chronic diseases not mentioned on the showcard, but did not have the possibility to answer "several other chronic diseases". However, the deviation from counting chronic diseases via the answers to the question of "Has a doctor ever |

| | |
|---|---|
| | told you that…" and the generated and imputed chronic disease variables are very small.<br><br>The chronic diseases include: A heart attack including myocardial infarction or coronary thrombosis or any other heart problem including congestive heart failure; High blood pressure or hypertension; High blood cholesterol; A stroke or cerebral vascular disease; Diabetes or high blood sugar; Chronic lung disease such as chronic bronchitis or emphysema; Cancer or malignant tumour, including leukaemia or lymphoma, but excluding minor skin cancers; Stomach or duodenal ulcer, peptic ulcer; Parkinson disease; Cataracts; Hip fracture; Other fractures; Alzheimer's disease, dementia, organic brain syndrome, senility or any other serious memory impairment; Other affective or emotional disorders, including anxiety, nervous or psychiatric problems; Rheumatoid Arthritis; Osteoarthritis, or other rheumatism; Chronic kidney disease |
| maxgrip | Maximum grip strength of the individual, measured during the session using a dynamometer. The graphs show the grip strength in kilograms. |

# Appendix C – Health Index Variables

**Table A.7: Variables from the SHARE Data**

| Dimension | Variable | MEA | A&S | Coding in Share |
|---|---|---|---|---|
| Heart attack | Ph006d1 | x | | Yes = 1, No = 0 |
| Chronic lung disease | Ph006d6 | x | | Yes = 1, No = 0 |
| Cancer | Ph006d10 | x | | Yes = 1, No = 0 |
| Hip fracture or femoral fracture | Ph006d14 | x | | Yes = 1, No = 0 |
| Doctor told you had: other | Ph006dot | x | | Yes = 1, No = 0 |
| Hearing aid | Ph045_ | x | | Yes = 1, No = 0 |
| Difficulties preparing a hot meal | Ph049d8 | x | | Yes = 1, No = 0 |
| Difficulties with telephone calls | Ph049d10 | x | | Yes = 1, No = 0 |
| Difficulties taking medications | Ph049d11 | x | | Yes = 1, No = 0 |
| Falling down | Ph089d1 | x | | Yes = 1, No = 0 |
| Fear of falling down | Ph089d2 | x | | Yes = 1, No = 0 |
| Dizziness, faints or blackouts | Ph089d3 | x | | Yes = 1, No = 0 |
| Suicidal feelings or wish to be dead in the last month | Mh004_ | x | | Yes = 1, No = 0 |
| Trouble sleeping recently | Mh007_ | x | | Yes = 1, No = 0 |
| Irritable recently | Mh010_ | x | | Yes = 1, No = 0 |
| Not enough energy in last month | Mh013_ | x | | Yes = 1, No = 0 |
| Unable to concentrate while reading | Mh015_ | x | | Yes = 1, No = 0 |
| Difficulties joining activities (because of health) | Ph005_ | x | x | Not limited = 0, limited, not severely = 0.5, severely limited = 1 |
| High blood pressure | Ph006d2 | x | x | Yes = 1, No = 0 |
| Cholesterol | Ph006d3 | x | x | Yes = 1, No = 0 |
| Stroke | Ph006d4 | x | x | Yes = 1, No = 0 |
| Diabetes | Ph006d5 | x | x | Yes = 1, No = 0 |
| Parkinson | Ph006d12 | x | x | Yes = 1, No = 0 |
| Cataracts | Ph006d13 | x | x | Yes = 1, No = 0 |
| Difficulties seeing across street | Ph043_ | x | x | None = 0, mild = 0.25, moderate = 0.5, bad = 0.75, very bad = 1 |
| Difficulties seeing arm length | Ph044_ | x | x | None = 0, mild = 0.25, moderate = 0.5, bad = 0.75, very bad = 1 |
| Difficulties walking 100mt | Ph048d1 | x | x | Yes = 1, No = 0 |
| Difficulties sitting long | Ph048d2 | x | x | Yes = 1, No = 0 |
| Difficulties getting out chair | Ph048d3 | x | x | Yes = 1, No = 0 |
| Difficulties climbing one flight of stairs | Ph048d5 | x | x | Yes = 1, No = 0 |
| Difficulties kneeing | Ph048d6 | x | x | Yes = 1, No = 0 |
| Difficulties extending arms | Ph048d7 | x | x | Yes = 1, No = 0 |
| Difficulties pulling/pushing object | Ph048d8 | x | x | Yes = 1, No = 0 |
| Difficulties lifting 5kg | Ph048d9 | x | x | Yes = 1, No = 0 |
| Difficulties picking an object | Ph048d10 | x | x | Yes = 1, No = 0 |
| Difficulties dressing | Ph049d1 | x | x | Yes = 1, No = 0 |
| Walking across a room | Ph049d2 | x | x | Yes = 1, No = 0 |

| | | | | |
|---|---|---|---|---|
| Difficulties bathing | Ph049d3 | x | x | Yes = 1, No = 0 |
| Difficulties eating | Ph049d4 | x | x | Yes = 1, No = 0 |
| Difficulties getting out of bed | Ph049d5 | x | x | Yes = 1, No = 0 |
| Difficulties using the toilet | Ph049d6 | x | x | Yes = 1, No = 0 |
| Difficulties using map | Ph049d7 | x | x | Yes = 1, No = 0 |
| Difficulties shopping | Ph049d9 | x | x | Yes = 1, No = 0 |
| Difficulties doing housework | Ph049d12 | x | x | Yes = 1, No = 0 |
| Difficulties managing money | Ph049d13 | x | x | Yes = 1, No = 0 |
| Depression | Mh002_ | x | x | Yes = 1, No = 0 |
| Unable to concentrate on entertainment | Mh014_ | x | x | Yes = 1, No = 0 |
| Less enjoyment | Mh016_ | x | x | Yes = 1, No = 0 |
| BMI | Bmi | x | x | (bmi <= 18.5 or bmi >= 30) = 1; (bmi >= 25 and bmi <30) = 0.5; (bmi > 18.5 and bmi < 25) = 0 |
| Grip strength | Maxgrip and bmi | x | x | It is recorded as a deficit for women if (maxgrip <= 29 & bmi <= 24); maxgrip <= 30 & (bmi >= 24.1 & bmi <28)); (maxgrip <= 32 & bmi > 28); for men if: (maxgrip <= 29 & bmi <= 24); (maxgrip <= 30 & (bmi >= 24.1 & bmi <= 28)); (maxgrip <= 32 & bmi > 28) |
| Mobility | Mobility | x | x | (mobility >= 3) = 1; (1 >= mobility < 3) = 0.5 and (mobility < 1) = 0 |
| Asthma | Ph006d7 | | x | Yes = 1, No = 0 |
| Arthritis | Ph006d8 | | x | Yes = 1, No = 0 |
| Pain in back, knees, hips or other joint | Ph010d1 | | x | Yes = 1, No = 0 |
| Walking Speed (W1, W2) | wspeed and wspeed2 | | x | No problem if: aged < 75(by construction); (wspeed >= 0.4 or wspeed == 0); problem if: wspeed <= 0.4 or wspeed2 == 1 |