Health trends in the wake of the financial crisis—increasing inequalities?

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Abstract

Aim: The financial crisis that hit Europe in 2007–2008 and the corresponding austerity policies have generated concern about increasing health inequalities, although impacts have been less salient than initially expected. One explanation could be that health inequalities emerged first a few years into the crisis. This study investigates health trends in the wake of the financial crisis and analyses health inequalities across a number of relevant population subgroups, including those defined by employment status, age, family type, gender, and educational attainment.

Methods: This study uses individual level panel data (EU-SILC, 2010–2013) to investigate trends in self-rated health. By applying individual fixed effects regression models, the study estimates the average yearly change in self-rated health for persons aged 15–64 years in 28 European countries. Health inequalities are investigated using stratified analyses.

Results: Unemployed respondents, particularly those who were unemployed in all years of observation, had a steeper decline in self-rated health than the employed. Respondents of prime working age (25–54 years) had a steeper decline than their younger (15–24) and older (55–64) counterparts, while single parents had a more favorable trend in self-rated health than dual parents. We did not observe any increasing health inequalities based on gender or educational attainment.

Conclusions: Health inequalities increased in the wake of the financial crisis, especially those associated with employment status, age, and family type. We did not observe increasing health inequalities in terms of levels of educational attainment and gender.

Keywords

Health inequality, self-rated health, fixed effects models, unemployment, single parents, gender, education

Introduction

A few years into the global financial crisis that hit much of Europe in 2007–08, the World Health Organization expressed concerns about a looming health crisis [1]. Albeit several studies show negative health effects of the crisis, impacts have been less salient than initially expected [2], even in countries that were hard hit by the crisis [3]. One explanation could be that poor health outcomes were concentrated in certain vulnerable population subgroups [4] and that this trend first became prominent a few years into the crisis [5].

The purpose of this paper is to investigate health inequalities in the aftermath of the global financial crisis. We will analyze whether population subgroups that are likely to be severely affected in periods of macroeconomic restructuring—including those defined by employment status, age, family type, gender, and educational attainment—experienced a disproportional deterioration of self-rated health. The empirical analyses include 28 European countries. The period of analysis is 2010–2013, thus covering the years of economic recovery [6]. During this period, did some population subgroups experience less favorable health outcomes?

Health inequalities have been observed over centuries and continue to plague European countries. While economic growth, democratization, and improved living conditions have contributed to better population health outcomes in all European countries, health inequalities are still prevalent [7]. Different theoretical frameworks are used to explain how health inequalities are generated and sustained, and perhaps the most elaborate arguments are formulated within the social determinants perspective. A range of conditions across the life course are here generating health inequalities through “inequalities in the conditions of daily life and the fundamental drivers that give rise to them: inequities in power, money and resources” [8]. Such inequalities in the conditions of daily life operate through both material

and psychosocial pathways, and may be reinforced by certain lifestyle factors such as smoking, alcohol consumption, and nutrition intake.

Most studies indicate negative health effects of the crisis. In particular, social determinants associated with income [9, 10], employment [9, 11–14], ethnic background [15], education [9, 14, 16], and area of socioeconomic deprivation [17] seem to have become more prominent. A few studies are comparative in character [14, 16, 18, 19]. However, the majority are case studies based on data from single countries, including Greece [15], Iceland [10], Italy [9], Spain [12, 15, 17], Sweden [11], and the United Kingdom [13].

All of the studies above address whether and how the crisis affected health inequalities, using a plethora of analytical techniques and health outcomes, but typically relying on a standard pre-crisis and post-crisis approach to changing health outcomes. However, due to persistent unfavorable macroeconomic conditions, including stubbornly high unemployment rates, and continued prevalence of austerity politics in Europe [5], it is reasonable to assume that the health risks associated with many social determinants continued to operate even after the initial phase of the financial crisis had levelled off. By following developments in the self-reported health status of almost 239,000 Europeans in different population subgroups, this study provides new evidence on health inequalities in the aftermath of the crisis.

Methods

Data

The empirical analyses are based on the 2010, 2011, 2012, and 2013 waves of EU-SILC (European Union Statistics on Income and Living Conditions), which is a panel survey containing 1,060,775 observations nested in 431,833 individuals. Necessary ethical approval of this research has been received from EUROSTAT, which is the statistical office of the

European Union and responsible for EU-SILC data. EU-SILC operates on a four-year rotation, implying that respondents are interviewed from one to four times during the observation period. Respondents who are interviewed only once and observations with missing values are excluded. All analyses are restricted to respondents aged 15–64 in 2010. Although older cohorts may have suffered financially from the financial crisis in some European countries — for example, by cutbacks in benefits to pensioners — the upper age limit is imposed on our data to reduce bias in results due to processes of physiological aging, which are likely to be pronounced among very old respondents. The net sample consists of 784,333 observations and 283,870 individuals in 28 European countries.

Variables

Dependent variable

The dependent variable is self-rated health, measured on a single item (How is your health in general?—very good = 4, good = 3, fair = 2, bad = 1, or very bad = 0). Empirically, self-rated health has been shown to be a robust predictor of morbidity and mortality [20, 21], and a global measure of both physical and mental health [22].

Explanatory variable

The main objective is to investigate individual change in self-rated health as a function of time. Time is here measured as the year of the personal interview, and introduced as a continuous variable.

Subgroup analyses

To investigate inequalities in self-rated health, models are stratified by employment status, age, family type, gender, and educational attainment. Employment status is measured based on self-reported economic status. Part-time employed and self-employed respondents are defined as being employed, and provide figures equivalent to Eurostat's seasonally adjusted unemployment rates of the EU-28 [23]. Because employment status may change between interviews, we distinguish between respondents that are employed in all years of observation, employed in some (but not all) observations, and unemployed in all observations. Following Eurostat, age is separated into three different age groups: young adults (15–24); prime working age (25–54); and late working age (55–64).

Family type distinguishes between respondents in single and dual parent households. Single parents have at least one person less than 18 years in the household. In the survey interviews, they also state that they lack a partner. Dual parents live with at least one person less than 18 years and one person above 18 years, and report having a partner. Changes in self-rated health among single parents are further analyzed by gender. Data on educational attainment are harmonized according to the International Standard Classification of Education (ISCED). We distinguish between respondents having attained less than upper secondary education (ISCED 1 and 2), up to upper secondary education (ISCED 3 and 4), and tertiary education (ISCED 5 and above).

Statistical analyses

Data were analyzed using linear individual fixed effects regression models, which estimate changes in self-rated health within persons. Our estimates are therefore unaffected by time-invariant confounding factors [24]. In order to analyze whether respondents in certain population risk groups have experienced steeper deterioration of their self-reported health in

the wake of the financial crisis, we fitted stratified models. Differences across the stratified samples were tested by estimating interactions between year of observation and subgroup characteristics. Since several of the subgroup categories are time-variant, estimates may be biased due to transitions out of the category assigned in the first year of observation. Therefore, stratifications based on time-varying categorical variables were adjusted for transitions between sub-categories by the addition of a confounding effect. Because respondents were observed up to four times during the observational period, standard errors were clustered on respondents.

Results

Descriptive statistics

Table 1 shows mean scores of self-rated health, as well as standard deviations and frequencies, for the total sample and all investigated subgroups. On average, respondents report that they are in good health (score of 2.89). Self-rated health deteriorates with age and is higher among single than dual parents. Self-rated health is also higher among men and increases with higher levels of educational attainment.

[Table 1 about here]

Figure 1 shows the overall trend in self-rated health during the observation period. A slight decline in aggregate levels of self-rated health can be observed for the years 2010–2013. This decline in self-rated health is particularly noticeable between 2010 and 2011 and between 2012 and 2013.

[Figure 1 about here]

Table 2 shows that the downward trend in self-rated health at country level appears in almost all of the countries, except Iceland, Malta, Norway, and Slovenia. In these four exceptional countries, aggregate levels of self-rated health have been fairly stable or even increased somewhat, something that may be due to compositional changes caused by systematic differences in the health status of respondents that dropped out of the panel and respondents that were newly recruited. In the statistical analyses, we therefore estimate changes in health within individuals instead of comparing aggregate levels of self-rated health across survey waves.

[Table 2 about here]

Fixed effects models

The fixed effects models in Table 3 confirm that many respondents experienced a decline in self-rated health between 2010 and 2013. For each year, self-rated health is on average reduced by −0.028 (Model 1). Subsequent fixed effects models investigate whether self-rated health diverges or converges between population subgroups. Self-rated health declined in all population subgroups. Regression models 2–4 investigate changes in self-rated health among employed and unemployed respondents. The decline in self-rated health is steeper among respondents who were unemployed during all years of observation (−0.037) than among respondents with stable employment (−0.027) or those partly unemployed (−0.031). In order to investigate whether these differences in self-rated health are statistically significant, we introduced two interaction terms in Model 5. Both interaction terms are statistically significant and show that the yearly change in self-rated health is −0.010 steeper for

respondents who were unemployed during all years of observation compared to respondents who were employed during the whole period. For respondents who were unemployed for parts of the period, the change in self-rated health is -0.005 steeper than that of the permanently employed.

[Table 3 about here]

Models 6–8 investigate changes in self-rated health across age-groups. Respondents of prime working age (25-54 years) have a steeper negative slope (−0.030, Model 7) than young adults aged 15-24 (−0.021, Model 6) and respondents in late working age who were between 55 and 64 years (−0.024, Model 8). The interaction terms in Model 9 show that these differences between cohorts are statistically significant. Thus, in the years after 2010, self-reported health deteriorated faster among respondents of prime working age than among young adults or those of late working age.

Table 4 shows differences across family types and gender. Surprisingly, respondents in dual parent families have a steeper decline (−0.032, Model 10) in self-rated health than single parents (−0.023, Model 11), and the interaction term in Model 12 shows that the difference (0.009) is statistically significant. We will return to this issue of a disproportionate decline in self-rated health among dual parents in the discussion below. Changes in self-rated health hardly differ between men and women (Models 13–14). The difference in the slope of the time trend between men and women is also statistically insignificant (Model 15). The results are somewhat different when we disaggregate family type by gender. Notably, single mothers have a steeper decline in self-rated health (−0.028, Model 17) than single fathers (−0.017, Model 16). This corresponds to an additional decrease in self-rated health among single mothers of -0.011 (Model 18), which is statistically significant.

[Table 4 about here]

Educational attainment seems to matter less for changing inequalities in self-rated health than employment status, age, and family type. Models 19 to 21 in Table 5 show a somewhat steeper decline in self-rated health among respondents with less than upper secondary education (−0.029) and respondents with tertiary education (-0.030). However, in comparison with the slope for respondents with up to upper secondary education (-0.027), these differences in estimates are not statistically significant (Model 21).

[Table 5 about here]

Discussion

The purpose of this paper was to investigate health inequalities in Europe in the aftermath of the global financial crisis by analyzing changes in self-rated health at individual level in various population subgroups. The disproportionately large reduction in self-rated health among dual compared to single parents is the most surprising finding. During periods of economic turmoil, one would expect that single parents experience more stress than dual parents. Further, austerity policies, which were introduced in the wake of the crisis [5], could be assumed to affect single parents' economy more than dual parents, who may rely on the earnings of both spouses. Because single parents initially had higher levels of self-rated health than dual parents (see Table 1), the disproportionately large reduction in self-rated health among dual parents contributed to increased health inequalities in the wake of the crisis. One tentative explanation for these differences in health outcomes of single and dual parents is that people tend to postpone family break-ups during periods of economic downturns, something

that may increase stress levels within dual parent households. In this context, it should be noted that unemployment and divorce are inversely related at micro level, indicating that families tend to postpone partnership dissolutions in periods of economic crisis [25].

We could also observe that the decline in self-rated health among single mothers was higher than that of single parents, suggesting that the favorable trend among single parents was largely driven by developments among single fathers. Recall that self-rated health among single fathers developed more favorably than that of single mothers in the wake of the crisis: whether this result is an expression of a 'health penalty' of single motherhood or driven by substantial gender differences in the roles and responsibilities attached to single parenthood (e.g. time spent on childcare and related tasks) needs to be investigated further.

It is important to emphasize that the results from our study do not suggest a significant change in health inequalities between men and women *per se*. Although men are often found to be more prone to economic downturns [4], which is often explained by their role as breadwinners and the limited possibilities to redefine their social roles in periods of unemployment (e.g. as homemaker or caregiver for other family members), we do not find any clear indirect support of such vulnerabilities affecting men's self-rated health in this study. The absence of any statistically significant differences in the development of self-rated health between men and women in this study may be due to various factors. One tentative explanation is that the economic behavior of men and women has become more similar in many European countries. Female labor force participation has increased substantially in most European countries since the mid-1970s. Thus, women's dependence on market incomes through paid employment is becoming increasingly similar to that of men, and as a consequence women may be similarly affected by economic downturns.

The results show that respondents who were unemployed in all years of observation experienced a disproportionate decline in self-rated health. This finding supports research that

finds the long-term unemployed to be more prone to deteriorating health than the periodically or continuously employed [26], particularly in periods of macroeconomic change [27]. Our results cannot be explained by 'health selection' into long-term unemployment — i.e. elevated risks of long-term unemployment among people with weak health [28] — as we are analyzing changes in self-rated health among respondents having different employment status, and not their self-rated health status at a single cross-section. It is well documented that health selection into unemployment was a prevalent phenomenon during the Great Recession in Europe [29, 30]. It is therefore important to communicate that the steep deterioration of self-rated health found among unemployed respondents in our study suggests a disproportionate decline in a vulnerable subgroup that was already in the initial years of the financial crisis in worse health than the overall population.

Respondents of prime working age experienced a more pronounced decline in self-rated health than older and younger persons. This is a somewhat surprising finding as youth unemployment rates are high in many European countries [23]. One explanation could be that persons of prime working age are more vulnerable to the long-term consequences of severe economic downturns, as the prevalence of care and provider responsibilities (for children and parents) is more prevalent in this age group. Despite improvements in the macro economy (GDP), unemployment rates have remained high in many European countries [23], a situation that might be more stressful for persons with care and provider responsibilities, typically of prime working age, than for younger and older cohorts.

Limitations

We have analyzed changes in self-rated health at individual level in several population subgroups. Although we have analyzed several social determinants of health, it would have been beneficial also to analyze inequalities in health across social class and immigrant status.

Lack of detailed information on occupations in EU-SILC unfortunately prevents us from defining exact homogeneous occupational groups suitable for a comparative analysis of social class. Lack of information on respondents', or their parents', country of birth in the longitudinal part of EU-SILC prevents a detailed analysis of potential health inequalities between natives and immigrants.

Regarding the analyses of inequalities between age groups, it is important to note that we cannot exclude bias in results caused by the physiological effects of aging. Although we tried to reduce this bias by excluding respondents above 65 years from the analysis, young adults are still more likely to have favorable health trends than prime working age respondents simply because their bodies are physiologically more resilient to age-related health deterioration. Nevertheless, if physiological aging is a main driver of our results, we would expect a steeper decline in self-rated health among respondents of late working age compared to those of prime working age. However, our results show the opposite pattern. Respondents of late working age suffered less from deteriorating self-rated health than those of prime working age.

Conclusion

In this study, we have analyzed changes in self-reported health at individual level in 28 European countries in the wake of the global financial crisis. Overall, the results in this study suggest increasing health inequalities in Europe during the second phase of the global financial crisis (2010–2013). Health inequalities became more pronounced, as unemployed respondents and respondents of prime working age (25–54 years) had a steeper decline in self-rated health. Similarly, respondents in families with two adults suffered from a disproportionally decline in self-rated health over the observation period. We did not find evidence of increasing health inequalities in terms of levels of educational attainment and

gender. Future research should investigate how persisting, and often increasing, health inequalities have been affected by austerity policies, including cutbacks in social benefits and the reorganization of public services that in parts of Europe involves processes of marketization and an increasing emphasis on new public management.

Declaration of conflicting interests

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References

1 World Health Organization. *The Financial Crisis and Global Health: Report of a High-Level Consultation.* Geneva, Switzerland: World Health Organization; 2009: 40.
2 Baumbach A, Gulis G. Impact of financial crisis on selected health outcomes in Europe. *The European Journal of Public Health.* 2014;24: 399–403.
3 Fountoulakis K, Siamouli M, Grammatikopoulos I, et al. Economic crisis-related increased suicidality in Greece and Italy: a premature overinterpretation. *Journal of Epidemiology & Community Health.* 2013;67: 379–80.
4 Edwards R. Who is hurt by procyclical mortality? *Social Science & Medicine.* 2008;**67**: 2051–8.
5 Stuckler D, Basu S. *The Body Economic: Why Austerity Kills: Recessions, Budget Battles, and the Politics of Life and Death*. New York: Basic Books; 2013.
6 Balcerowicz L, Łaszk A, Rzońca A, et al. *Economic Growth in the European Union.* Brussels: Lisbon Council; 2013.
7 Marmot M, Allen J, Bell R, et al. WHO European review of social determinants of health and the health divide. *The Lancet* 2012;380: 1011–29.
8 Marmot M. *Fair Society, Healthy Lives.* London: Strategic Review of Health Inequalities in England post-2010; 2010: 16.
9 Bonaccio M, Di Castelnuovo A, Costanzo A, et al. Decline of the Mediterranean diet at a time of economic crisis. Results from the Moli-sani study. *Nutrition, Metabolism and Cardiovascular Diseases.* 2014;24: 853–60.
10 Ásgeirsdóttir TL, Ragnarsdóttir DÓ. Health-income inequality: the effects of the Icelandic economic collapse. *International Journal for Equity in Health.* 2014;13:1–12.
11 Blomqvist S, Burström B, Backhans MC. Increasing health inequalities between women in and out of work—the impact of recession or policy change? A repeated cross-sectional study in Stockholm county, 2006 and 2010. *International Journal for Equity in Health.* 2014;13: 1–10.
12 Rajmil L, Medina-Bustos A, Fernández de Sanmamed M-J, et al. Impact of the economic crisis on children's health in Catalonia: a before-after approach. *BMJ Open.* 2013;3:1–10.
13 Harhay MO, Bor J, Basu S, et al. Differential impact of the economic recession on alcohol use among white British adults, 2004–2010. *The European Journal of Public Health.* 2013;24: 410–5.
14 Abebe DS, Tøge AG, Dahl E. Individual-level changes in self-rated health before and during the economic crisis in Europe. *International Journal for Equity in Health.* 2016;15: 1–8.
15 Agudelo-Suárez AA, Ronda E, García AM, et al. Impact of economic crisis on mental health of migrant workers: what happened with migrants who came to Spain to work? *International Journal of Public Health.* 2013;58: 627–31.
16 Copeland A, Bambra C, Nylén L, et al. All in it together? The effects of recession on population health and health inequalities in England and Sweden, 1991–2010. *International Journal of Health Services.* 2015;45: 3–24.
17 Maynou L, Saez M, Lopez-Casasnovas G. Has the economic crisis widened the intraurban socioeconomic inequalities in mortality? The case of Barcelona, Spain. *Journal of Epidemiology & Community Health.* 2014;0: 1–11.
18 Rajmil L, de Sanmamed M-J, Choonara I, et al. Impact of the 2008 economic and financial crisis on child health: a systematic review. *International Journal of Environmental Research and Public Health.* 2014;11: 6528–46.
19 Maynou L, Saez M. Economic crisis and health inequalities: evidence from the European Union. *International Journal for Equity in Health.* 2016;15: 135.

20 Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *Journal of Health and Social Behavior.* 1997;38: 21–37.
21 Eriksson I, Undén A-L, Elofsson S. Self-rated health. Comparisons between three different measures. Results from a population study. *International Journal of Epidemiology.* 2001;30: 326–33.
22 Svane-Petersen AC, Dencker-Larsen S. The impact of self-reported health and register-based prescription medicine purchases on re-employment chances: a prospective study. *SSM-Population Health.* 2016;2: 580–6.
23 Eurostat. Figure 3: Unemployment rates EU-28, EA-19, US and Japan, seasonally adjusted, January 2000–February 2016(%). Eurostat 2016. Available from: http://ec.europa.eu/eurostat. Date of access 20161010.
24 Gunasekara FI, Richardson K, Carter K, et al. Fixed effects analysis of repeated measures data. *International Journal of Epidemiology.* 2014;43: 264-69.
25 Amato PR, Beattie B. Does the unemployment rate affect the divorce rate? An analysis of state data 1960–2005. *Social Science Research.* 2011;40: 705–15.
26 Mäki N, Martikainen P. A register-based study on excess suicide mortality among unemployed men and women during different levels of unemployment in Finland. *Journal of Epidemiology & Community Health.* 2012;66: 302–7.
27 Coope C, Gunnell D, Hollingworth W, et al. Suicide and the 2008 economic recession: who is most at risk? Trends in suicide rates in England and Wales 2001–2011. *Social Science & Medicine.* 2014;117: 76–85.
28 Claussen B, Bjørndal A, Hjort PF. Health and re-employment in a two year follow up of long term unemployed. *Journal of Epidemiology & Community Health.* 1993;47: 14–8.
29 Tøge AG, Blekesaune M. Unemployment transitions and self-rated health in Europe: a longitudinal analysis of EU-SILC from 2008 to 2011. *Social Science & Medicine.* 2015;143: 171–8.
30 Heggebø K. Unemployment in Scandinavia during an economic crisis: cross-national differences in health selection. *Social Science & Medicine.* 2015;130: 115–24.

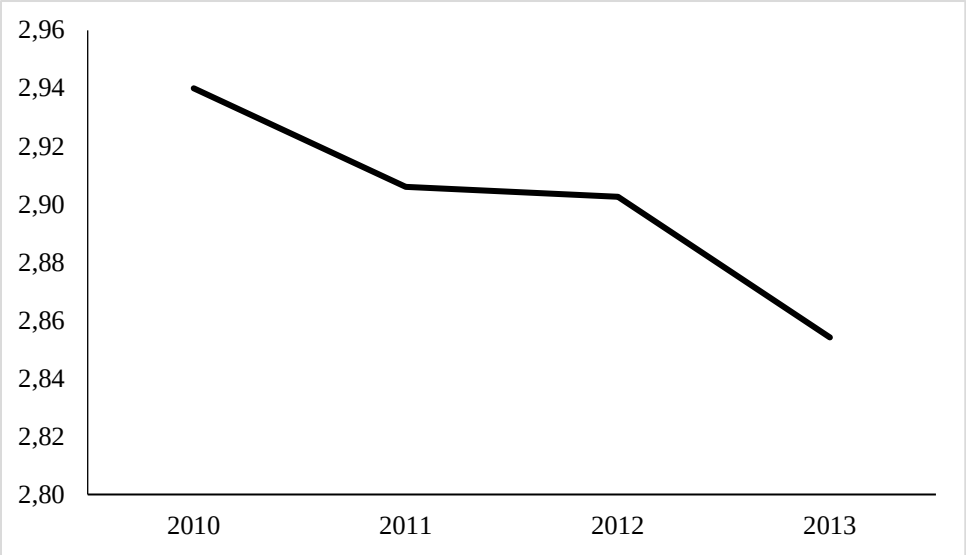

Figure 1. Self-rated health in 28 European countries, 2010–2013. (Data source: EU-SILC 2010–2013 panel data)

Table 1. Self-rated health in different population subgroups as averages of 28 European countries 2010–2013. (Data source: EU-SILC 2010–2013 panel data)

	Mean	Standard Deviation	Number of Observations
Total	2.89	0.89	650,189
Employed	2.90	0.89	589,012
Unemployed	2.82	0.90	61,177
Age 15–24	3.40	0.68	104,782
Age 24–54	2.94	0.84	399,021
Age 55–64	2.42	0.91	146,386
Dual parent	3.01	0.79	199,755
Single parent	3.20	0.83	71,883
Men	2.93	0.88	310,626
Women	2.86	0.89	339,548
Upper secondary education	2.72	0.95	174,042
Secondary education	2.89	0.87	311,747
Tertiary education	3.13	0.76	157,829

Table 2. Self-rated health in 28 European countries, 2010–2013. (Data source: EU-SILC 2010–2013 panel data)

	2010	2011	2012	2013
Austria	3.13	3.08	3.09	3.03
Belgium	3.06	3.08	3.07	3.04
Bulgaria	2.94	2.91	2.87	2.85
Cyprus	3.28	3.3	3.31	3.27
Czech Republic	2.88	2.8	2.81	2.76
Denmark	3.02	3.0	2.97	2.94
Estonia	2.66	2.61	2.59	2.58
Greece	3.44	3.38	3.35	3.30
Spain	2.96	3.04	3.02	2.91
Finland	2.99	2.98	2.89	2.85
France	3.00	2.96	2.99	2.92
Croatia	2.53	2.52	2.45	2.45
Hungary	2.69	2.72	2.72	2.66
Ireland	3.29	3.28	3.25	3.24
Iceland	3.16	3.17	3.19	3.18
Italy	2.94	2.85	2.89	2.86
Lithuania	2.55	2.44	2.41	2.37
Luxembourg	3.08	2.98	2.98	2.89
Latvia	2.49	2.5	2.49	2.44
Malta	2.93	3.02	2.98	2.93
Netherlands	3.07	3.01	3.05	2.98
Norway	3.08	2.99	3.11	3.06
Poland	2.76	2.76	2.74	2.72
Portugal	2.54	2.54	2.5	2.45
Sweden	3.25	3.25	3.2	3.18
Slovenia	2.84	2.81	2.84	2.85
Slovakia	2.93	2.90	2.92	2.88
United Kingdom	3.24	3.17	3.09	3.03

Table 3. Individual level fixed effects regression models of self-rated health as a function of time. Confidence intervals using robust standard errors in parenthesis. (Data source: EU-SILC 2010–2013 panel data)

Model	1	2	3	4	5	6	7	8	9
	All	Employment status				Age			
		Employed at all obs.	Unemployed at some obs.	Unemployed at all obs.	Interaction	15–24 years	25–54 years	55–64 years	Interaction
Year of obs.	-0.028** (-0.029 − -0.026)	-0.027** (-0.028 − -0.025)	-0.031** (-0.036 − -0.027)	-0.037** (-0.046 − -0.028)	-0.027** (-0.028 − -0.025)	-0.021** (-0.025 − -0.018)	-0.030** (-0.032 − -0.028)	-0.024** (-0.028 − -0.021)	-0.021** (-0.025 − -0.018)
Interaction between year of obs. and…									
Unemployed at some obs.					-0.005* (-0.010 − -0.000)				
Unemployed at all obs.					-0.010* (-0.020 − -0.001)				
15–24 years									0.009** (0.005 − 0.013)
55–64 years									0.006** (0.002 − 0.010)
Confounder									
Unemployed			-0.017** (-0.025 − -0.008)		-0.017** (-0.025 − -0.008)				
Observations	650,189	545,608	78,513	26,068	650,189	104,782	399,021	146,386	650,189
Respondents	238,967	201,295	26,734	10,938	238,967	41,492	145,512	51,963	238,967

Note: ** p<0.01, * p<0.05; obs. = observations

Table 4. Individual level fixed effects regression models of self-rated health as a function of time. Confidence intervals using robust standard errors in parenthesis. (Data source: EU-SILC 2010–2013 panel data)

Model	10	11	12	13	14	15	16	17	18
		Family type			Gender			Family status/gender	
	Dual parent	Single parent	Interaction	Male	Female	Interaction	Single parent men	Single parent women	Interaction
Year of obs.	-0.032** (-0.035 − -0.030)	-0.023** (-0.029 − -0.018)	-0.032** (-0.035 − -0.030)	-0.027** (-0.029 − -0.025)	-0.028** (-0.030 − -0.026)	-0.027** (-0.029 − -0.025)	-0.017** (-0.025 − -0.008)	-0.028** (-0.035 − -0.021)	-0.017** (-0.025 − -0.008)
Interaction between year of obs. and…									
Single parent			0.009** (0.003 − 0.015)						
Female						-0.001 (-0.004 − 0.002)			-0.011* (-0.022 − -0.001)
Confounder									
Single parent	-0.011 (-0.047 − 0.026)	-0.016 (-0.058 − 0.025)	-0.013 (-0.041 − 0.014)				-0.024 (-0.099 − 0.051)	-0.016 (-0.066 − 0.034)	-0.018 (-0.060 − 0.023)
Observations	202,753	68,885	271,638	310,626	339,548	650,174	28,005	40,873	68,878
Respondents	79,615	30,966	110,581	115,146	123,816	238,962	13,008	17,956	30,964

Note: ** p<0.01, * p<0.05; obs. = observations

Table 5. Individual level fixed effects regression models of self-rated health as a function of time. Confidence intervals using robust standard errors in parenthesis. (Data source: EU-SILC 2010–2013 panel data)

Model	19	20	21	22
	Educational attainment			
	Less than upper secondary	Upper secondary	Tertiary	Interaction
Year of obs.	-0.029** (-0.032 – -0.025)	-0.027** (-0.029 – -0.025)	-0.030** (-0.033 – -0.027)	-0.028** (-0.032 – -0.025)
Interaction between year of obs. and…				
Secondary				-2.268 (-10.077 – 5.540)
Tertiary				4.694 (-4.027 – 13.414)
Confounder:				
Secondary	-0.008 (-0.086 – 0.069)	-0.028 (-0.067 – 0.011)	-0.090 (-0.251 – 0.071)	0.001 (-0.003 – 0.005)
Tertiary	0.008 (-0.070 – 0.086)	-0.012 (-0.029 – 0.005)	-0.009 (-0.054 – 0.036)	-0.002 (-0.007 – 0.002)
Observations	174,042	311,747	157,829	643,618
Respondents	7,025	122,252	60,801	237,273

Note: ** p<0.01, * p<0.05; obs. = observations