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Short communication

Social mobility and health in European countries: Does welfare regime type matter?

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ABSTRACT

Health inequalities pose an important public health challenge in European countries, for which increased social mobility has been suggested as a cause. We sought to describe how the relationship between health inequalities and social mobility varies among welfare regime types in the European region. Data from six rounds of the European Social Survey was analyzed using multilevel statistical techniques, stratified by welfare regime type, including 237,535 individuals from 136 countries. Social mobility among individuals was defined according to the discrepancy between parental and offspring educational attainment. For each welfare regime type, the association between social mobility and self-rated health was examined using odds ratios and risk differences, controlling for parental education. Upwardly mobile individuals had between 23 and 44% lower odds of reporting bad or very bad self-rated health when compared to those who remained stable. On an absolute scale, former USSR countries showed the biggest and only significant differences for upward movement, while Scandinavian countries showed the smallest. Downward social mobility tended to be associated with worse health, but the results were less consistent. Upward social mobility is associated with worse health in all European welfare regime types. However, in Scandinavian countries the association of upward mobility was smaller, suggesting that the Nordic model is more effective in mitigating the impact of social mobility on health and/or of health on mobility.

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1. Introduction

Despite sustained efforts put in effect across European countries, health inequalities persist as an important public health challenge (Mackenbach, 2012). A range of policy solutions has been tried, but so far with relatively little impact. Social mobility has been identified as an important driver of health inequalities. Social mobility can occur either between generations (parents and children) as well as within the life-course of the individual. Truncated intergenerational social mobility is of particular concern because it can result in the crystallization of wealth inequality as well as health inequalities. Ill health is a potent cause of both intra-individual and inter-generational mobility restriction. For example, childhood illness has been shown to adversely affect educational attainment (Case and Paxson, 2008), which will

subsequently affect an individual's success in the labor market. Ill health in midlife can affect labor force participation (reduced working hours, job loss), resulting in downward income mobility. Restricted social mobility can be manifest in multiple dimensions – educational achievement, occupational status or earnings and income. Furthermore health selection can be both direct (e.g. depressive illness directly resulting in truncated educational achievement) as well as indirect – e.g. depressive illness resulting in reduced social mobility via intermediary factors such as stigma and discrimination (West, 1991). Accordingly, social protections such as universal access to health care or anti-discrimination legislation represent important policies to promote both intra-individual and inter-generational social mobility.

An individual's socioeconomic position is a robust determinant of his/her health, both in terms of their current (or achieved) socioeconomic position, but also their lifetime trajectory (Marmot and Macmillan, 2004; Marmot and Wilkinson, 2005). This can reflect processes of accumulation or a direct impact of social mobility (Hallqvist et al., 2004). Studies on the effect of social mobility on health have not always produced clear-cut results, with

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some seeming to indicate that upward social mobility can be just as deleterious to health as downward social mobility (Hemmingsson et al., 1999; Liberatos et al., 1988). These mixed results might, however, be a consequence of the inconsistent ways in which social mobility has been operationalized in the empirical literature (Singhammer and Mittelmarm, 2010). The use of different indicators to characterize social groups can also be of consequence, since different indicators, such as education, occupation or income, as well as the intergenerational movement between them, can have different meanings (Galobardes et al., 2006).

Overall, there are both theoretical and empirical grounds to suggest that the causal relationship between health and social mobility is bidirectional: individuals have more or less opportunities for social mobility depending on their health endowment and their health achievement is affected by transitions between social strata.

The extent of social mobility varies substantially between countries (Beller and Hout, 2006). Government actions, such as expanding access to schooling or investing in the health of children (e.g. via improved nutrition or vaccination programs) have the potential capacity to break the inter-generational transmission of social disadvantage. Considering the strong relationship between social mobility and health, these governmental actions, systematized in Fig. 1, can have an important impact on health inequalities. Welfare regime types, often used to categorize European countries, share common policies such as the ones outlined in Fig. 1.

In this cross national comparative study, we sought to examine the relation between social mobility and population health among different types of welfare regimes in the European region, in order to understand how the welfare state might moderate the link between mobility and health.

2. Methods

2.1. Data sources and variables

Individual data was collected from six rounds of the European

Social Survey (ESS), between 2002 and 2012, from thirty selected countries. The ESS is a repeated cross-sectional survey that collects comparable data on individual socioeconomic characteristics and health status of several European countries (ESS ERIC, 2014). Data is available online at www.europeansocialsurvey.org.

The outcome variable, self-rated health, was based on the survey participant's response to the question 'How is your health in general?', dichotomized so that 1 included 'bad' or 'very bad' (other possible answers were 'fair', 'good' or 'very good').

Social mobility was measured in relation to mother and father's achieved level of education according to the International Standard Classification of Education (ISCED) levels. Although social mobility is usually measured on the basis of the fathers' social standing, the increasing participation of women in the workforce and the importance of the mothers' characteristics on children's health behaviors (Favaro and Santonastaso, 1995) support the importance of considering mothers' status in social mobility studies; therefore, this analysis was done separately. Social mobility was classified in three possible categories: 'down', 'stable' and 'up', according to whether the respondent had reached, respectively, a lower, the same, or higher educational level than his or her parent. Our measure of mobility controlled for the parent's educational achievement when the respondent was 14 (the same variable used to assess mobility). Failing to take into account the 'social group of origin' has been a common pitfall in previous studies of inter-generational social mobility and health (Singhammer and Mittelmarm, 2010). Controlling for parent's educational achievement yields mobility coefficients that can be interpreted as independent from social group of origin.

Other individual-level variables included age (restricted to 25 years and up), gender, marital status, belonging to an ethnic minority group, self-perceived income, domicile and main occupational activity. Respondents who were in full-time education were excluded, since not having completed education did not permit comparison to parents' achievement. For all these variables a base category with contrasting indicator variables was specified, except age, which was centered around its grand mean.

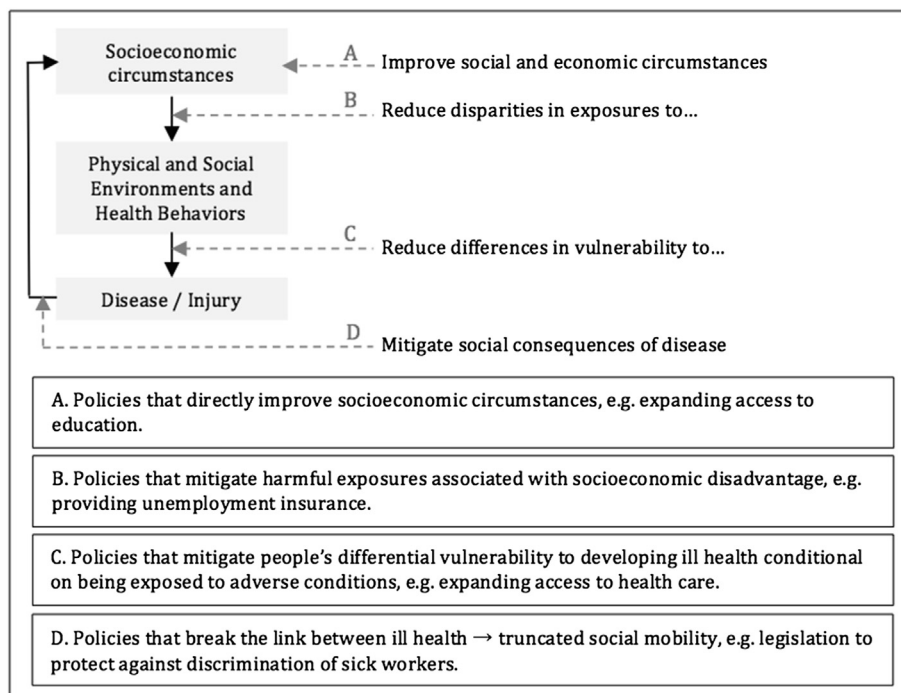


Fig. 1. Entry points for reducing and eliminating health disparities.

To reduce the possibility of confounding by economic development, Gross Domestic Product (GDP) per capita, converted to international dollars using purchasing power parity, was retrieved from the World Bank database (World Bank, 2014) and included as a country-level variable (specified per country, per year).

Additionally, the Gini coefficient, which might also confound the association between social mobility and health, was retrieved from the Eurostat database (Eurostat, 2014) and used as a level 2 variable (country-year specific). However, this was only used as a sensitivity analysis, since the Gini coefficient was missing for many countries for several years.

2.2. Welfare regimes

Countries were grouped by welfare regime type and analyzed separately. Welfare regime classification is a much-debated topic, not only with disputed typologies, but also regarding which characteristics should be used to for their classification (Bambra, 2007). Nonetheless, we started with a widely used typology that divides European countries into four regime types:

- (i) Scandinavian, characterized by universal and generous benefits and a strong redistributive social security system (Eikemo et al., 2008a; Fenger, 2007);
- (ii) Anglo-Saxon, with a low level of government spending on social protection, modest benefits, usually means-tested (Eikemo et al., 2008a; Fenger, 2007);
- (iii) Bismarckian, with benefits tied to employment, financed mainly by employer and employee, and minimal redistribution (Eikemo et al., 2008a);
- (iv) Southern, with a dualist system of welfare provision, which strongly protects part of the population while under-protecting another (19).

This classification is primarily based on Esping-Andersen's et al. (1990) groundbreaking work, which operationalized three principles: decommodification, social stratification and the public-private mix, to classify the first three typologies (Eikemo et al., 2008a; Esping Andersen et al., 1990). Ferrera (1996) later added the Southern type, basing his classification on the coverage of social protection schemes (Ferrera, 1996). This typology has been replicated in other attempts to define welfare regime types (Bambra, 2007; Bonoli, 1997) and has been used previously in the health literature (Eikemo et al., 2008a, 2008b).

The consideration of Central and Eastern European countries to the European Union adds further complexity to this classification. Historically, the trajectories of these countries' welfare transformation can be separated in two, depending on the extent to which the welfare effort collapsed in the 1990's (Cook and Press, 2010). This typology separates Central and Eastern European countries (including Poland, Hungary, Czech Republic and the Baltic states, among others) from the remaining former USSR states (such as Russia and Central Asian countries). However, using a hierarchical cluster analysis, Fenger (2007) showed that, based on similarities on government spending, social situation and political participation, these countries could be divided in the following way:

- (i) Former USSR, with generally low governmental spending on social programs, mostly financed through social contributions;
- (ii) Post-Communist European, very similar to the first type, but with higher levels of economic growth, inflation, social well-being and egalitarianism (Fenger, 2007).

It is important to note that these characteristics do not necessarily describe the countries in absolute; in fact, most countries have a mix of different welfare regimes, but nonetheless have predominant characteristics of one type.

2.3. Statistical analysis

Data was analyzed using multilevel logistic models based on a logit-link function with a first order quasi-likelihood estimation procedure. The models were run using MLwiN program version 2.28 (Rasbash et al., 2013). The data was analyzed considering its hierarchical structure in three levels: individuals (level 1), nested within years (level 2), nested within countries (level 3). Overall odds, odds ratios, overall probabilities and rate differences were calculated for each welfare regime. This was based in part in the methods used by Hemmingsson et al. (1999), although we applied a multilevel modeling technique.

The use of multilevel statistical techniques allows for the analysis of the effect of both individual and contextual variables on the outcome of interest. In this analysis, the contextual variable was country- and year-specific, making it mandatory to include both as levels. Additionally, these models take into account the hierarchical nesting of individual observations within a year and within a country, correcting otherwise underestimated standard errors and allow the modeling of variability at each level of analysis (Subramanian et al., 2003).

As a sensitivity analysis, the same models were run using different estimation procedures.

3. Results

Table 1 outlines the distribution of the variables among welfare regime types. Each type includes between two and seven countries, ranging in sample size from 23,310 to 62,509 individuals. Countries with a Scandinavian welfare regime had the lowest proportion of people reporting bad or very bad health (5.4%), followed by Anglo-Saxon (5.8%), Bismarckian (6.9%), Southern (11.9%), Post-Communist European (14.5%) and Former USSR (19.6%).

Most respondents had achieved a higher educational level than their parents: between 49.3 and 63.2% had improved in relation to their mother, and between 45.6 and 61.7% in relation to their father. Between one third and half of respondents remained in the same educational level as their parents and a smaller proportion 'moved down' – only 1.6% in southern countries in relation to mother's achievement, up to 12.1% in Bismarckian countries, in relation to father's.

Table 2 shows the coefficients for the mobility variable (stable, upward, downward) from the multilevel models. The full models are available in Tables 3 and 4 as an online supplement. The general pattern of association between social mobility and health was similar across all regime types, i.e. upward mobility was protective, while downward mobility was detrimental for self-rated health.

Figs. 2 and 3 show the probabilities and risk differences in the different mobility groups in each welfare regime type. As was noted in Table 1, the overall probability of bad self-rated health differs significantly between welfare regime types. The benefits of upward mobility are present in all regime types, but risk differences are particularly high for Southern, Post Communist European and Former USSR regimes and significantly different only in the latter. Scandinavian countries showed the lowest risk differences between upwardly mobile and stable individuals when considering either mothers' or fathers' education.

Downward mobility is generally detrimental. Post Communist European countries show the biggest absolute differences, with downward mobility leading to an absolute difference of 2.9 and

Table 1
Composition of each welfare type.

	Scandinavian	Anglo-Saxon	Bismarckian	Southern	Post-Communist European	Former USSR
Countries	Denmark Finland Norway Sweden Iceland	United Kingdom Ireland	Austria Belgium Switzerland Germany France Luxembourg Netherlands	Spain Greece Italy Portugal	Czech Republic Hungary Poland Slovenia Slovakia Croatia Bulgaria	Estonia Latvia Lithuania Russia Ukraine
n (level 2)	23	12	33	18	34	16
n (level 1)	37,975	23,310	62,509	31,789	51,698	30,072
Level 1 variables						
% bad or very bad health	5.4	5.8	6.9	11.9	14.5	19.6
Mobility, mother (%)						
Down	6.3	9.3	4.7	1.6	4.0	9.9
Stable	30.4	35.2	32.9	49.0	38.0	29.2
Up	63.2	55.5	62.4	49.3	58.0	60.9
Mobility, father (%)						
Down	10.1	10.2	12.1	3.4	6.8	9.4
Stable	34.6	36.7	42.3	50.9	46.1	28.9
Up	55.4	53.1	45.6	45.6	47.0	61.7
Women (%)	50.0	55.0	52.9	56.6	55.1	61.7
Mean age (years)	51.7	51.7	51.6	52.4	51.8	52.7
Urban (%)	64.3	66.0	56.9	65.0	61.3	70.2
Main activity (%)						
Paid work	63.5	49.7	53.9	48.0	48.9	50.6
No activity	31.3	35.3	32.9	35.5	42.0	42.0
Other	5.2	15.0	13.3	16.5	9.1	7.3
Feeling about income (%)						
Living comfortably	49.5	35.4	38.1	15.3	11.3	4.8
Coping	41.4	45.3	46.3	45.0	45.3	37.7
Difficult	7.0	14.3	12.3	27.7	29.0	37.0
Very difficult	2.0	5.0	3.3	12.1	14.5	20.5
Minority (%)	2.4	5.0	4.6	3.0	5.7	12.7
Marital status (%)						
Married	57.5	55.0	59.8	63.7	61.9	52.9
Separated/divorced	12.2	11.2	11.9	6.5	9.5	14.7
Widow	7.0	10.9	9.3	12.2	14.2	19.8
Single	23.3	22.9	19.1	17.6	14.3	12.7
Level 2 variables						
GDP per capita (international dollars)	39,459	36,705	37,075	26,396	19,924	16,599

Note: ISCED International Standard Classification of Education.

3.6% in the risk of bad health measured on the basis of maternal and paternal achievement, respectively. In Scandinavian, Anglo-Saxon, Bismarckian and former USSR countries, this risk difference ranges from 0.1 to 1.9%. Overall, Scandinavian countries showed the smallest absolute difference in health between stable and downward mobility when measured by the father's achievement, and former USSR countries when measured by the mother's.

As a sensitivity analysis, the same models were run using different estimation procedures (second order marginal quasi-likelihood, first and second order predictive quasi-likelihood and Markov Chain Monte Carlo). All resulted in models with the same effect of social mobility in the different welfare regimes. A model was also run with the Gini coefficient as a level 2 variable; this had

very little effect in the odds ratios or risk differences and no effect in the statistical significance of the results.

4. Discussion

This study sought to describe differences in the relationship between social mobility and health within different welfare regimes to better understand the effect that different regime types might have. Different welfare regimes had a substantially different proportion of individuals with bad or very bad self-rated health, lowest in countries in the Scandinavian regime (5.4%), followed by Anglo-Saxon (5.8%), Bismarckian (6.9%), Southern (11.9%), Post-Communist European (14.5%) and finally Former USSR (19.6%).

Table 2
Mobility odds ratios and 95% confidence intervals from the multilevel models in each welfare regime type.

		Scandinavian	Anglo-Saxon	Bismarckian	Southern	Post-Communist European	Former USSR
Mother	n (level 1)	30,458	19,752	53,644	29,030	46,556	24,959
	Stable	1	1	1	1	1	1
	Down	1.39 (1.06,1.83)	1.40 (1.11,1.78)	1.09 (0.89,1.31)	0.72 (0.43,1.21)	1.35 (1.13,1.60)	1.01 (0.84,1.22)
	Up	0.77 (0.68,0.86)	0.70 (0.60,0.81)	0.77 (0.71,0.84)	0.56 (0.49,0.62)	0.69 (0.65,0.75)	0.67 (0.61,0.74)
Father	n (level 1)	29,837	19,184	52,326	28,417	45,500	23,036
	Stable	1	1	1	1	1	1
	Down	1.18 (0.95,1.45)	1.51 (1.19,1.91)	1.20 (1.06,1.37)	1.24 (0.92,1.68)	1.45 (1.28,1.65)	1.17 (0.98,1.39)
	Up	0.76 (0.67,0.86)	0.68 (0.59,0.79)	0.76 (0.69,0.82)	0.57 (0.51,0.64)	0.73 (0.68,0.78)	0.68 (0.62,0.75)

Note: bold indicates OR significant at $p < 0.05$.

Table 3
Multilevel models: mobility from mother's education.

	Scandinavian	Anglo-Saxon	Bismarckian	Southern	Post communist	Former USSR
n (level 1)	30,458	19,752	53,644	29,030	46,556	24,959
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Fixed Parameters						
Intercept	0.008 (0.005,0.012)	0.009 (0.006,0.027)	0.011 (0.007,0.018)	0.019 (0.009,0.037)	0.016 (0.011,0.022)	0.036 (0.026,0.050)
Individual Level						
Mobility (reference: stable)						
Down	1.39 (1.06,1.83)	1.40 (1.11,1.78)	1.09 (0.89,1.31)*	0.72 (0.43,1.21)*	1.35 (1.13,1.60)	1.01 (0.84,1.22)*
Up	0.77 (0.68,0.86)	0.70 (0.60,0.81)	0.77 (0.71,0.84)	0.56 (0.49,0.62)	0.69 (0.65,0.75)	0.67 (0.61,0.74)
Gender (ref: male)	1.03 (0.92,1.15)*	0.89 (0.77,1.02)*	1.07 (0.98,1.15)*	1.59 (1.45,1.75)	1.06 (0.99,1.13)*	1.21 (1.12,1.32)
Age	0.99 (0.99,1.00)*	1.00 (0.99,1.01)*	1.01 (1.01,1.01)	1.04 (1.04,1.05)	1.04 (1.04,1.04)	1.05 (1.04,1.05)
Domicile (ref: urban)	0.94 (0.84,1.05)*	0.85 (0.74,0.98)	0.88 (0.82,0.95)	1.14 (1.05,1.24)	1.11 (1.04,1.18)	0.97 (0.89,1.05)*
Main activity (ref: paid work)						
No activity	6.29 (5.39,7.35)	6.17 (5.00,7.61)	4.35 (3.90,4.84)	2.54 (2.22,2.89)	3.35 (3.06,3.67)	2.63 (2.35,2.93)
Other	2.83 (2.21,3.62)	2.55 (1.96,3.31)	1.82 (1.59,2.09)	1.91 (1.64,2.21)	1.97 (1.74,2.24)	1.56 (1.31,1.86)
Income (ref: living comfortably)						
Coping	1.40 (1.24,1.59)	1.49 (1.26,1.78)	1.52 (1.38,1.67)	1.38 (1.15,1.64)	1.55 (1.33,1.81)	1.10 (0.84,1.45)*
Difficult	2.97 (2.49,3.54)	2.61 (2.12,3.21)	3.29 (2.94,3.68)	2.28 (1.90,2.73)	3.00 (2.57,3.51)	1.76 (1.35,2.29)
Very difficult	4.57 (3.56,5.86)	4.09 (3.18,5.27)	5.21 (4.47,6.06)	3.97 (3.28,4.82)	5.37 (4.55,6.32)	2.86 (2.19,3.75)
Minority (ref: no)	1.44 (1.05,1.97)	0.86 (0.61,1.21)*	1.27 (1.08,1.49)	1.03 (0.79,1.34)*	0.97 (0.86,1.09)*	1.02 (0.91,1.15)*
Marital status (ref: married)						
Separated/divorced	1.37 (1.18,1.59)	2.02 (1.67,2.43)	1.28 (1.14,1.42)	1.23 (1.03,1.47)	1.03 (0.93,1.14)*	1.28 (1.14,1.43)
Widow	1.07 (0.89,1.27)*	1.13 (0.92,1.37)*	1.08 (0.97,1.21)*	1.06 (0.95,1.17)*	1.06 (0.98,1.14)*	1.18 (1.08,1.30)
Single	1.02 (0.87,1.19)*	1.19 (0.99,1.43)*	1.17 (1.05,1.31)	1.29 (1.12,1.51)	1.09 (0.97,1.21)*	1.31 (1.13,1.52)
Mother's education (ref: ISCED V/VI)						
ISCED I	2.39 (1.76,3.26)	1.63 (1.18,2.25)	2.14 (1.66,2.77)	1.23 (0.79,1.92)*	2.48 (1.93,3.21)	2.02 (1.68,2.43)
ISCED II	2.00 (1.49,2.71)	1.25 (0.91,1.72)*	1.72 (1.34,2.21)	0.67 (0.39,1.13)*	1.89 (1.48,2.41)	1.76 (1.45,2.12)
ISCED III	1.67 (1.25,2.23)	1.20 (0.82,1.77)*	1.34 (1.04,1.71)	1.03 (0.62,1.71)*	1.26 (0.99,1.59)*	1.25 (1.04,1.49)
ISCED IV	1.64 (1.04,2.59)	0.37 (0.17,0.79)	1.58 (1.09,2.27)	0.53 (0.15,1.88)*	1.54 (1.05,2.26)	1.12 (0.91,1.38)*
Level 2						
GDP	0.99 (0.99,1.00)*	0.99 (0.99,1.00)*	1.00 (0.99,1.00)*	0.99 (0.99,0.99)	0.99 (0.99,0.99)	0.99 (0.99,0.99)
Random Parameters						
Level 3 variance (σ_{ν_0})	0.08 (0.06)*	0.19 (0.19)*	0.22 (0.12)*	0.23 (0.17)*	0.07 (0.04)*	0.03 (0.02)*
Level 2 variance (σ_{μ_0})	0.01 (0.01)*	0 (0)	0 (0)	0.01 (0.01)*	0.03 (0.01)	0.01 (0.01)*

Notes: * not significant at $p < 0.05$. ISCED International Standard Classification of Education. OR Odds ratio. CI Confidence interval.

This difference was reproduced in the multilevel models, which controlled for several socioeconomic individual and country characteristics.

Both on a relative and on an absolute scale, upward mobility was associated with better health, regardless of welfare regime type. However, on the relative scale, these were significant for all regime types, whereas on the absolute scale there was only a true difference in countries from the Former USSR. Downward mobility was generally associated with worse health, but to differing extents and following a less clear pattern.

It has been argued before that the use of only absolute or relative measures can be misleading, and our findings reiterate this argument (King et al., 2012; Kelly et al., 2007). In fact, relative measures of health inequalities are insensitive to equiproportionate changes, while absolute measures are insensitive to uniform changes, which reflects different equity value judgments implied in the empirical analysis (Allanson and Petrie, 2013). Thus, different results between relative and absolute scales might be a consequence of different levels of overall ill-health: former USSR countries had the highest prevalence of bad or very bad self-rated health, making absolute differences more likely to emerge.

This study is sensible to a number of limitations. The outcome measure, self-rated health, is very culturally-sensitive, complicating cross-national comparisons (Jylhä et al., 1998). Nevertheless, it is an important predictor of mortality in every society where it has been examined (Idler and Benyamini, 1997), making it a much used and valued health measure. Additionally, social mobility doesn't have a unanimously accepted operationalization. Differences in educational achievement are not necessarily a reflection of different societal prestige or access to different social resources. Indeed, occupational mobility is often preferred (Beller and Hout,

2006), but the occupational measures available in the ESS were crude and difficult to compare between respondents and their parents. Also importantly, although the analyses controlled for parental education, this operationalization of social mobility might be measuring processes of accumulation. The welfare regime classification is also debatable. Although most of the regime types that were used in this study have been extensively used before, and despite both level 2 and level 3 variability being very low and non-significant (hinting to a high homogeneity between countries and country-years), they might not reflect the characteristics of welfare regimes that have an impact on the relationship between social mobility and health. Finally, it is not possible to assess causality between social mobility and health, considering that our analyses are based on cross-sectional data. Indeed, it is possible that the health of participants in our sample was already affected by mobility in the previous time period. The association between health and socioeconomic status is likely dynamic and bidirectional across the life course.

Overall, it is interesting to note that although all welfare regime types show relative differences in bad self-rated health for upwardly mobile individuals, on an absolute scale the Scandinavian regime shows the smallest differences and the former USSR group the largest. Although welfare regime type seems to account for an important part of the variation in self-perceived health among European countries (Eikemo et al., 2008b), the extent to which it impacts health inequalities has been questioned. Mackenbach et al. (2008) reported a surprisingly high degree of health inequalities in northern European countries, showing that, despite egalitarian policies, lifestyle-related risk factors remain an important cause of mortality inequalities (Mackenbach et al., 2008). Eikemo et al. (2008a) also showed a clear gradient of health inequalities

Table 4
Multilevel models: mobility from father's education.

	Scandinavian	Anglo-Saxon	Bismarckian	Southern	Post communist	Former USSR
Level 1 n	29,837	19,184	52,326	28,417	45,500	23,036
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Fixed Parameters						
Intercept	0.009 (0.007,0.014)	0.009 (0.005,0.019)	0.013 (0.009,0.018)	0.014 (0.008,0.024)	0.017 (0.013,0.023)	0.033 (0.023,0.047)
Individual Level						
Mobility (reference: stable)						
Down	1.18 (0.95,1.45)*	1.51 (1.19,1.91)	1.20 (1.06,1.37)	1.24 (0.92,1.68)*	1.45 (1.28,1.65)	1.17 (0.98,1.39)*
Up	0.76 (0.67,0.86)	0.68 (0.59,0.79)	0.76 (0.69,0.82)	0.57 (0.51,0.64)	0.73 (0.68,0.78)	0.68 (0.62,0.75)
Gender (ref: male)	1.03 (0.92,1.15)*	0.89 (0.77,1.03)*	1.05 (0.97,1.14)*	1.56 (1.42,1.72)	1.07 (1.00,1.14)	1.26 (1.15,1.37)
Age	0.99 (0.99,1.00)*	1.00 (0.99,1.01)*	1.01 (1.01,1.01)	1.04 (1.04,1.05)	1.04 (1.04,1.04)	1.05 (1.04,1.05)
Domicile (ref: urban)	0.95 (0.85,1.06)*	0.88 (0.76,1.02)*	0.88 (0.82,0.95)	1.14 (1.04,1.24)	1.11 (1.04,1.18)	0.95 (0.87,1.03)*
Main activity (ref: paid work)						
No activity	6.11 (5.23,7.14)	5.87 (4.76,7.24)	4.44 (3.97,4.95)	2.54 (2.22,2.91)	3.29 (2.99,3.60)	2.70 (2.41,3.04)
Other	2.67 (2.07,3.45)	2.47 (1.89,3.22)	1.19 (1.64,2.17)	1.94 (1.67,2.26)	1.91 (1.68,2.17)	1.58 (1.32,1.90)
Income (ref: living comfortably)						
Coping	1.41 (1.24,1.61)	1.45 (1.21,1.72)	1.50 (1.36,1.65)	1.35 (1.13,1.61)	1.55 (1.32,1.81)	1.08 (0.82,1.43)*
Difficult	2.86 (2.39,3.42)	2.54 (2.06,3.13)	3.25 (2.90,3.65)	2.24 (1.87,2.69)	2.94 (2.51,3.45)	1.71 (1.29,2.26)
Very difficult	4.66 (3.62,6.01)	3.74 (2.89,4.85)	5.05 (4.33,5.90)	3.94 (3.24,4.78)	5.31 (4.49,6.27)	2.83 (2.13,3.76)
Minority (ref: no)	1.46 (1.06,2.01)	0.97 (0.69,1.35)*	1.33 (1.13,1.57)	1.03 (0.79,1.35)*	0.97 (0.86,1.09)*	1.01 (0.89,1.15)*
Marital status (ref: married)						
Separated/divorced	1.42 (1.34,1.96)	2.06 (1.69,2.49)	1.26 (1.13,1.41)	1.23 (1.03,1.48)	1.04 (0.93,1.16)*	1.25 (1.11,1.42)
Widow	1.08 (0.84,1.34)*	1.17 (0.96,1.43)*	1.06 (0.95,1.19)*	1.06 (0.95,1.18)*	1.07 (0.99,1.16)*	1.18 (1.07,1.30)
Single	1.03 (0.88,1.22)*	1.19 (0.99,1.44)*	1.15 (1.03,1.29)	1.31 (1.13,1.53)	1.08 (0.96,1.21)*	1.15 (0.98,1.35)*
Education (ref: ISCED V/VI)						
ISCED I	2.18 (1.70,2.79)	1.59 (1.19,2.12)	1.92 (1.61,2.28)	1.70 (1.24,2.33)	2.27 (1.87,2.74)	2.12 (1.77,2.54)
ISCED II	1.67 (1.29,2.16)	1.09 (0.82,1.45)*	1.59 (1.34,1.88)	1.33 (0.94,1.89)*	1.72 (1.44,2.06)	1.79 (1.49,2.15)
ISCED III	1.42 (1.13,1.78)	1.16 (0.82,1.64)*	1.36 (1.17,1.57)	0.99 (0.68,1.47)*	1.21 (1.02,1.43)	1.39 (1.17,1.67)
ISCED IV	1.67 (1.21,2.29)	0.93 (0.54,1.62)*	1.26 (0.98,1.61)*	1.11 (0.52,2.38)*	0.83 (0.58,1.18)*	1.17 (0.94,1.45)*
Level 2						
GDP	0.99 (0.99,1.00)*	1.00 (0.99,1.00)*	1.00 (0.99,1.00)*	0.99 (0.99,0.99)	0.99 (0.99,0.99)	0.99 (0.99,0.99)
Random Parameters						
Level 3 variance (σ_{ν_0})	0.09 (0.07)*	0.19 (0.19)*	0.21 (0.12)*	0.24 (0.17)*	0.08 (0.05)*	0.03 (0.02)*
Level 2 variance (σ_{u_0})	0.01 (0.01)*	0 (0)	0 (0)	0.003 (0.004)*	0.03 (0.01)	0.01 (0.01)*

Notes: * not significant at $p < 0.05$. ISCED International Standard Classification of Education. OR Odds ratio. CI Confidence interval.

between European welfare states, from Southern (with the highest inequalities) to Bismarckian (with the lowest) (Eikemo et al., 2008a). This 'paradox' was examined by Mackenbach (2012), who postulated that social mobility might be one of the drivers of health inequalities in Western European welfare states. Some studies have indeed shown that increased social mobility is associated with stronger health inequalities (Simons et al., 2013; Ásgeirsdóttir and

Ragnarsdóttir, 2013; Elstad, 2001). However, Brekke, Grunfeld and Kverndokk (2014), showed that higher health inequalities in more egalitarian countries might be solely a consequence of a more equal health distribution, since the concentration index is more sensitive to health-contingent income transfers than to income-contingent health transfers (Brekke et al., 2012).

Our findings suggest that some welfare states are in fact more

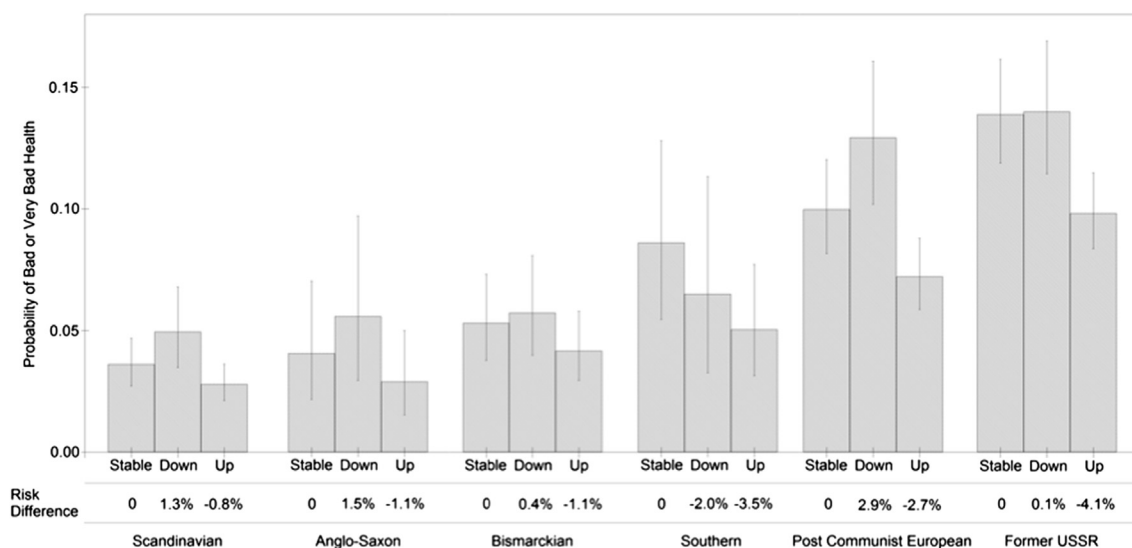


Fig. 2. Probability of 'Bad' or 'Very Bad' self-rated health per to mobility group, defined from mother's educational achievement, per welfare type (error bars are 95% confidence intervals) and risk difference.

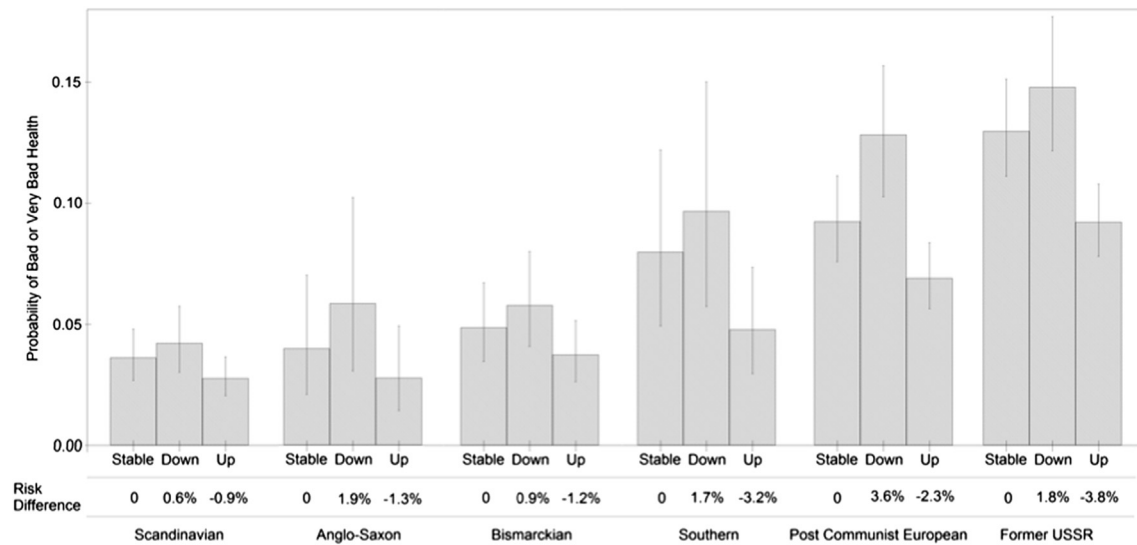


Fig. 3. Probability of 'Bad' or 'Very Bad' self-rated health per to mobility group, defined from father's educational achievement, per welfare type (error bars are 95% confidence intervals) and risk difference.

effective in separating social mobility from health, namely Scandinavian countries exhibit smaller differences while former USSR societies the largest. This is not surprising considering that, for example, comprehensive social policies seem to be associated with fewer inequalities in 'sickness' in European countries, as well as lower rates of non-employment (van der Wel et al., 2011). It is understandable then, that Scandinavian countries will manage to disassociate social mobility from health more effectively, leading to the small risk differences we found for upward mobility in these countries.

Importantly too, Central and Eastern European countries underwent considerable transitions in the last decades, with important consequences to their social structures (Saar et al., 2012). Our results for the post-Communist European and former USSR welfare regimes, which tended to show the largest absolute differences in health, might reflect, at least partially, these important structural changes and not just relative social mobility.

Our findings also reinforce the need to assess health inequalities using both relative and absolute measures, since the use of only one might be very misleading.

Interestingly too, when comparing the association of downward mobility with health as assessed in reference to paternal versus maternal achievement, the former was larger in every welfare regime except the Scandinavian region. Considering that Scandinavian countries have the best indicators of gender equality (European Institute for Gender Equality, 2013), a possible explanation for this is that in other, less gender-egalitarian countries, the father's status is more decisive in determining the family's socio-economic status, and therefore a downward mobility from his social position has a greater impact.

To the best of our knowledge, this is the first research into the moderating effect of welfare regimes on the relationship between social mobility and health, and to measure social mobility separately based on maternal and paternal achievement. Further exploration of our findings would benefit from measuring occupational social mobility in addition to educational mobility. It would also benefit from a separate analysis for each gender, since the effect might be different for women and men and might help explain the differences in the association of downward mobility when measured on the basis of maternal and paternal achievement.

Previous studies have questioned the contribution of the

welfare regime in mitigating the extent of health inequalities and identified increased social mobility as a possible cause for this (Mackenbach, 2012). However, the present results show that important systematic differences exist between regime types with regard to upward mobility and health, with a notably attenuated association on the absolute scale in Scandinavian countries and stronger association in the former USSR regimes. This suggests that social mobility is not a cause of high health inequalities found in Scandinavian countries in previous analyses.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.socscimed.2015.08.035>.

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Update

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Corrigendum

Corrigendum to “Social mobility and health in European countries: Does welfare regime type matter?” [Soc. Sci. Med. 142 (2015) 241–248]



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The authors regret that an error is present in the abstract of the above published paper. The corrected abstract is given below:

Health inequalities pose an important public health challenge in European countries, for which increased social mobility has been suggested as a cause. We sought to describe how the relationship between health inequalities and social mobility varies among welfare regime types in the European region. Data from six rounds of the European Social Survey was analyzed using multilevel statistical techniques, stratified by welfare regime type, including 237,535 individuals from 136 countries. Social mobility among individuals was defined according to the discrepancy between parental and offspring educational attainment. For each welfare regime type, the association between social mobility and self-rated health was examined using odds ratios and risk differences, controlling for parental education. Upwardly mobile individuals had between 23 and 44% lower odds of reporting bad or very bad self-rated health when compared to those who remained stable. On an absolute scale, former USSR countries showed the biggest and only significant differences for upward movement, while Scandinavian countries showed the smallest. Downward social mobility tended to be associated with worse health, but the results were less consistent. Upward social mobility is associated with better health in all European welfare regime types. However, in Scandinavian countries the association of upward mobility was smaller, suggesting that the Nordic model is more effective in mitigating the impact of social mobility on health and/or of health on mobility.

The authors would like to apologise for any inconvenience caused.

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