

# Ageing, Education and Socioeconomic Inequalities: Evidence from 13 European Countries

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**Abstract:** While population ageing appears to be one of the greatest challenges during the 21<sup>st</sup> century for Europe, unequal ageing appears to be the most direct one. Current policy doctrines reflect that the aged have to be treated as a single homogeneous group. Challenging that reality this paper wills to inquire specific dimensions of ageing differences and inequalities. In particular, we examine country and group inequalities based on physical characteristics, such as gender or age cohorts, but also socioeconomic characteristics, such as educational levels, linked on health issues, wealth, deprivation, and employment. Data are provided by the Survey of Health, Ageing and Retirement in Europe (SHARE) which is a multidisciplinary, longitudinal, and cross-national study focused on collection of micro data on health, socioeconomic status and social networks of individuals aged 50 plus. The findings provide alternative interpretations to the ageing crisis shedding more light to the ageing process.

**Keywords:** *ageing, education, ISCED codes, socioeconomic inequalities, SHARE data*

## 1. INTRODUCTION

Population ageing will be one of the dominant issues in the new era. Demographic and socioeconomic factors are expected to radically change the shape of the future, the political agenda and the actual social policy in all Europe. To address the central issue of whether and to what extent ageing inequalities are rooted mainly in previous life-stages this investigation uses new highly comparable international data allowing significant advances in scientific research and targeted social policy. This paper is a first attempt to explore how social stratification factors such as education are imprinted in the lives of today's older Europeans characterizing the production and reproduction of inequality before and during the typical ageing period. Arguing that all individuals do not age following the same homogenous pattern we examine specific country & group inequalities and differentiations. Data for this paper are provided by the third wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) which is a multidisciplinary, longitudinal, and cross-national study focused on health, socioeconomic status and social networks of individuals aged 50 plus.

## 2. SAMPLE DESCRIPTION & DATA DEFINITIONS

The SHARELIFE sample of men and women aged 50+ includes data on 26.836 respondents. The data collection in 2008/09 utilized a computerized life grid or life history calendar to help respondents recall major events about their background [1]. Thirteen European countries have contributed data to the 3<sup>rd</sup> research wave of SHARE. They constitute a balanced representation of the various regions in Europe, ranging from the North (Denmark and Sweden) through Central Europe (Austria, France, Germany, Switzerland, Belgium, and the Netherlands) and Eastern Europe (Czech Republic, Poland) to the South (Spain, Italy and Greece). About 3% of the respondents never went to school while 21% has a degree of higher education. More than 90% of the sample had one or more jobs in the past while 25% is still

working. The average age of the respondents is 67 years old and 23% of them perceive their health as very good or excellent.

**Table 1: SHARELIFE sample selected descriptive statistics**

	Age (%)		Gender (%)		Education		Total	
	<65	>65	Male	Female	ISCED 0-6	St. Er.	Ind.	%
Austria	42,7	57,3	45,0	55,0	2,885***	0,054	847	3,16
Germany	40,4	59,6	45,3	54,7	3,414***	0,031	1.852	6,90
Sweden	46,4	53,6	47,0	53,0	2,839***	0,046	1.893	7,05
Netherlands	51,0	49,0	46,9	53,1	2,847***	0,038	2.210	8,24
Spain	43,5	56,5	45,3	54,7	1,627***	0,041	2.048	7,63
Italy	42,5	57,5	44,8	55,2	1,864***	0,031	2.492	9,29
France	46,5	53,5	44,7	55,3	2,536***	0,050	2.483	9,25
Denmark	48,9	51,1	47,1	52,9	3,387***	0,033	2.141	7,98
Greece	44,6	55,4	46,2	53,8	2,051***	0,035	2.951	11,00
Switzerland	46,4	53,6	45,9	54,1	2,939***	0,036	1.296	4,83
Belgium	45,6	54,4	45,5	54,5	2,846***	0,033	2.832	10,55
Czech R.	52,6	47,4	44,2	55,8	2,717***	0,038	1.873	6,98
Poland	54,4	45,6	42,6	57,4	2,298***	0,035	1.918	7,15
Total	45,0	55,0	45,0	55,0	2,557***	0,016	26.836	100

Note: \*\*\* mean significance at 1%

The variables that have been taken into account derive from six different modules of the survey (demographics, financial history section, general life questions, health section, work quality, and generated variables):

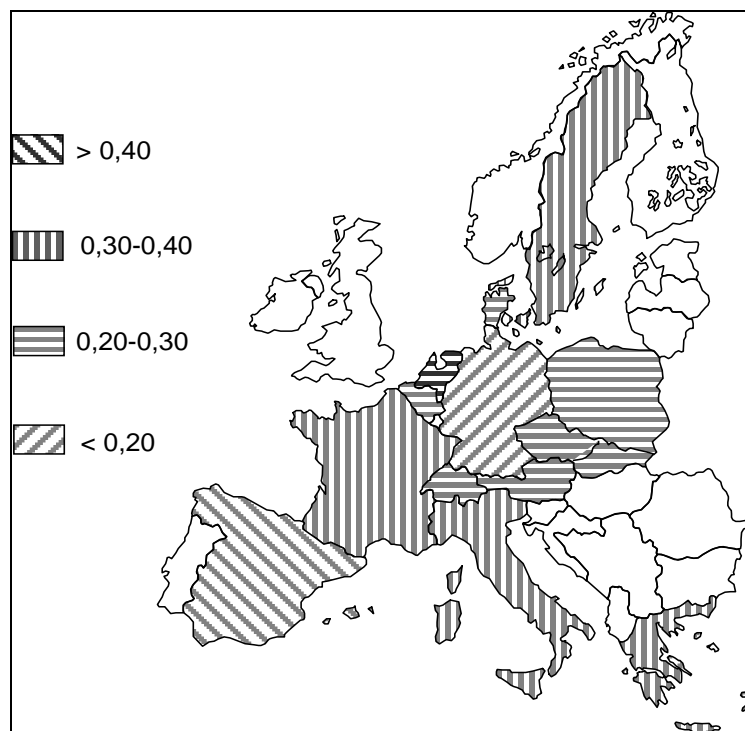
- Age: continuous variable as well as a dichotomous one at the age of 65
- Gender: male & female
- Weights: probability & frequency weights
- International Standard Classification of Education or ISCED levels: level 0 – pre-primary education or none, level 1 – primary education or first stage of basic education, level 2 – lower secondary or second stage of basic education, level 3 – (upper) secondary education, level 4 – post-secondary non-tertiary education, level 5 – first stage of tertiary education, level 6 – second stage of tertiary education
- Self-perceived health: answer categories – excellent, very good, good, fair, poor
- Periods of ill health or disability that have lasted for more than a year: answer categories – none, one, two, three, more than three
- Money in mutual funds or managed investment accounts or in stocks & shares listed or unlisted on stock markets: answer categories – yes or no
- Periods of financial hardship or hunger: answer categories – none, financial hardship, hunger, both
- Work allowed development of new skills: answer categories – strongly agree, agree, disagree, strongly disagree
- Work had adequate salary: answer categories – strongly agree, agree, disagree, strongly disagree

### 3. METHOD & EMPIRICAL EVIDENCE

For this paper the applied methodology draws by the differential ageing model while the quantitative approach is based on well-established inequality measures [5]. Our analysis is focused on education and its connections to health, employment and financial background. In particular, we present empirical evidence on cross-country (and group) education-related

inequality derived by measurements and estimations of specific Gini coefficients (G), concentration indices (CI), and odds ratios (OR).

Analyses of Gini coefficient & Lorenz curve are extensively used for measuring inequality. Their applicability is strongly supported in the field of economics (income & assets) as well as those of health and education. Gini coefficient is an informative measure which allows for direct comparisons between countries and/or specified groups. For this primary investigation the particular index is weighted using probability weights and is computed for population subgroups at the direction proposed by Frick et al. [2].



**Figure 1: Gini coefficient on education**

In Figure 1 we present an indicative empirical example on Gini coefficient based on ISCED codes (levels 0 to 6) for 13 European countries grouped by their education-related inequality scores. The country with the higher degree of inequality among its older population concerning the well-recognized educational levels (lower to higher) is Spain (0,411). On the contrary, substantially lower inequality observed in Germany (0,166). The medium-high inequality estimation concerns Greece, France, Italy, and Sweden while countries as Belgium, Poland, Netherlands, Austria, Denmark, Czech Republic, and Switzerland present medium-low education-related inequality. This kind of measurement provides the a point of departure for our investigation attempting to point out that the population in question (middle aged to oldest olds) is far from homogenous. Differences in education are substantial between countries as well as within and this fact has crucial impact on later life of every individual in all Europe.

The concentration index is also used frequently for estimating inequality. Often is preferable to Gini because of its ability to quantify more clearly a certain degree of inequality between groups. Its applications involve grouped and/or micro-data depending on the research field in question, for example health economics, market-oriented analysis, socioeconomic inequality etc. For this paper we estimate six concentration indices using a grouped & weighted approach as in Kakwani et al. [3]. Our estimations serve as measures of (education-related) socioeconomic inequality expressed via health, employment, and financial individual background variables.

Table 2 examines the variables above taking into account the ordering of educational groups (from lower to higher). For example the concentration index for the subjective health status of

the respondents shows that the three countries of South Europe have the highest values while three countries of Central Europe (Netherlands, Belgium, and Switzerland) have the lowest. Five countries out of thirteen have higher than the average inequality (the Mediterranean countries plus Austria and Poland). The CI for the number of periods of ill health during the life of the respondents shows that in Greece and Spain there is higher inequality than elsewhere. Significantly lower inequality appears only in the Netherlands, Austria and Poland. Comparing the CI values about previous jobs which allowed the development of new skills for the respondents we see not only higher levels of inequality than before but also very important differences between top (Italy and Poland) and bottom (Sweden) countries. As concerns CI about the adequate salary Spain, Greece and Italy are once again in the top inequality group. In fact these are the only countries with values higher than the average score. CI ranking for investments in stocks or mutual funds as related to educational levels adds Belgium to the previous top inequality group (Mediterranean countries). The lowest values go to the Scandinavia which has just fractions of the average measurement. This CI is also the highest one concerning all the particular estimations. The last CI shows that financial hardship or hunger as an important event during the life of the respondents distributed unequally among educational levels mainly in the South (plus Poland) but was of no such concern for many countries, for example Denmark and Czech Republic.

**Table 2: Education-related concentration indices (standard errors in brackets)**

	<b>Self-perceived health</b>	<b>Periods of ill health</b>	<b>Allowed dev. of skills</b>	<b>Adequate salary</b>	<b>Stocks or mutual funds</b>	<b>Financial hardship - hunger</b>
Austria	0,0563	0,0020	0,0611	0,0301	0,2854	0,0158
	[0,0077]	[0,0039]	[0,0111]	[0,0116]	[0,0369]	[0,0076]
Germany	0,0457	0,0105	0,0373	0,0352	0,1559	0,0060
	[0,0050]	[0,0026]	[0,0065]	[0,0079]	[0,0156]	[0,0056]
Sweden	0,0514	0,0115	0,0486	0,0093	0,0525	0,0020
	[0,0053]	[0,0028]	[0,0077]	[0,0099]	[0,0077]	[0,0036]
Netherlands	0,0270	0,0012	0,0493	0,0182	0,2373	0,0022
	[0,0046]	[0,0025]	[0,0064]	[0,0061]	[0,0169]	[0,0037]
Spain	0,0659	0,0123	0,0584	0,0692	0,3791	0,0391
	[0,0061]	[0,0029]	[0,0089]	[0,0111]	[0,0263]	[0,0046]
Italy	0,0708	0,0085	0,0908	0,0486	0,3547	0,0353
	[0,0044]	[0,0022]	[0,0081]	[0,0073]	[0,0205]	[0,0039]
France	0,0519	0,0055	0,0733	0,0183	0,1940	0,0039
	[0,0046]	[0,0016]	[0,0081]	[0,0088]	[0,0146]	[0,0045]
Denmark	0,0441	0,0056	0,0506	0,0051	0,0669	0,0008
	[0,0043]	[0,0023]	[0,0067]	[0,0070]	[0,0102]	[0,0026]
Greece	0,0642	0,0139	0,0426	0,0590	0,4271	0,0368
	[0,0033]	[0,0018]	[0,0080]	[0,0079]	[0,0349]	[0,0034]
Switzerland	0,0340	0,0047	0,0524	0,0200	0,1311	0,0107
	[0,0050]	[0,0016]	[0,0088]	[0,0094]	[0,0168]	[0,0046]
Belgium	0,0354	0,0106	0,0781	0,0070	0,1834	0,0118
	[0,0038]	[0,0023]	[0,0069]	[0,0068]	[0,0116]	[0,0034]
Czech Republic	0,0433	0,0069	0,0602	0,0025	0,1089	0,0010
	[0,0046]	[0,0029]	[0,0057]	[0,0079]	[0,0199]	[0,0028]
Poland	0,0612	0,0022	0,0900	0,0282	0,4308	0,0261
	[0,0058]	[0,0020]	[0,0082]	[0,0104]	[0,0422]	[0,0046]
Total	0,0543	0,0076	0,0846	0,0426	0,2674	0,0077
	[0,0015]	[0,0006]	[0,0023]	[0,0026]	[0,0051]	[0,0013]

The concluding step of our analysis utilizes a widely used statistical technique when dealing with categorical data. The examination of whether or not the probability of “0” or “1” (negative versus positive outcome) is the same in two distinct groups when being compared takes under serious consideration the case of odds ratios. For the estimations below we use logistic regressions with probability weights reporting odds ratios while controlling for age and gender. Every single OR is based on the comparison of the relative frequency of a single event between two population groups. In our case the distinct population groups are represented by the individuals with ISCED 0 & 1 as compared to individuals with ISCED 5 & 6 (none & primary education or tertiary education). Choosing this set of categories means that the rest of the distribution is not taken into account anymore.

In Table 3 SHARELIFE’s geographical representation of Europe into four different country-groups may be seen as one more point of departure concerning the current typology of the European welfare state: Mediterranean, Continental, Eastern, and Scandinavian [4]. The results from the previous exercise (CI) allows for further examination of this crude typology considering the implementation of ORs. Group education-related inequality for the subjective health measurement (being in good, very good or excellent health condition as opposed to fair or poor health) is in favour of the most educated group (as expected) and highly significant in all Europe. This result is also comparable to the next estimation. In the case of the number of periods of ill health (none as opposed to some) ORs are less decisive but significant still across Europe. Dichotomizing the answer categories (agreement or disagreement) about the development of new skills in past work environments reveals very important differences between the extreme educational groups (all significant in every region or welfare state type). The same stands for the adequacy of salary in Southern and Central Europe (less significant in Eastern Europe and not significant in Northern Europe). The investment (or not) in stocks or other financial products shows a very high inequality between the less educated group and its extreme opposite. The absence (or the event) of a financial hardship or hunger represents one more instance of inequality between the two distinct groups – where this event is relevant (significant only in the Mediterranean and in Eastern Europe).

**Table 3: Education-related odds ratios (standard errors in brackets)**

	<b>Self-perceived health</b>	<b>Periods of ill health</b>	<b>Allowed dev. of skills</b>	<b>Adequate salary</b>	<b>Stocks or mutual funds</b>	<b>Financial hardship - hunger</b>
South	3,014***	1,935***	7,288***	1,960***	7,270***	3,061***
Europe	[0,505]	[0,423]	[1,836]	[0,421]	[1,274]	[0,553]
Central	2,192***	1,369**	4,124***	1,769***	3,706***	0,939
Europe	[0,241]	[0,184]	[0,681]	[0,266]	[0,461]	[0,101]
East	3,787***	1,069	12,34***	1,584**	12,15***	1,776***
Europe	[0,703]	[0,211]	[3,957]	[0,334]	[3,614]	[0,340]
North	2,605***	1,906***	4,372***	0,928	2,233***	0,950
Europe	[0,330]	[0,274]	[0,835]	[0,138]	[0,278]	[0,118]
Total	2,764***	1,584***	6,219***	2,209***	7,281***	1,033
	[0,199]	[0,137]	[0,734]	[0,204]	[0,590]	[0,072]

Note: \*\*\*, \*\*, \* mean significance at 1%, 5%, 10% respectively

#### 4. CONCLUDING REMARKS

In this paper we examined certain aspects of cross country and between groups’ education-related inequality primarily on health, employment, and financial background. Pure education inequalities are high and vary across Europe as concern the population aged 50 plus. The utilization of acknowledged educational levels as a social stratification variable allowed for more depth in the analysis and the findings may as well serve as one more point of departure

for further investigations. In this respect our main argument about the unequal ageing and its connection to unequally accumulation during the life-course remains under development. But so far certain impressions are brought into the picture:

- The findings reveal a strong North-South European divide as concerns the examined health, employment and financial issues. In almost every case the Mediterranean countries belong to the top group of inequality.
- A good to excellent subjective health status concentrated unequally not only across Europe but also between top and bottom educational groups. This is not just something to be expected but more importantly is something to be taken seriously when public policies are supposedly targeted towards the lower socioeconomic groups. The number of periods of ill health is one of the very few instances where the welfare type divide in Europe brings the North & the South very close. Countries from both types/regions suffer from education-related inequality in that respect.
- The concentration of agreements considering workplaces which allowed for development of new skills varies significantly across Europe. The top-bottom educational comparison strengthens furthermore the evidence of very high inequalities on that matter. The parallel concentration of agreements about the adequacy of salary is dissimilar. The Southern countries stand out above the average but when grouped comparisons examined high inequality is back for every European region.
- The cases of investment in financial products and their counterparts the examined events of financial hardship or hunger provide two different distributions & set for comparison for the same agent as concerns the presence of high inequalities: South & East Europe. Their welfare backgrounds have a lot more to reveal about their education-related financial inequalities and stratifications.

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