COVID-19 Pandemic Severity and Changes to Subjective Financial Wellbeing of Older Europeans: Regional Disaggregation of SHARE Data

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Abstract

The COVID-19 pandemic and containment measures had multiple consequences on people's wellbeing, affecting, among others, their financial situation and employment stability. We focus on subjective financial wellbeing of people aged 51+ measured between Wave 7 (2019) and Wave 9 (2022) of the SHARE database, and during the COVID-19 pandemic, and its relation to pandemic severity, as measured by excess mortality, using multilevel ordered logistic regressions and standard errors clustering.

During the analysed period, the average subjective financial wellbeing improved in 93 out of 122 analysed regions. SHARE respondents were assigned with regions from which they were sampled or regions of their historical accommodation in various versions of regional disaggregation. The regional-level mean weekly excess mortality from June 2021 until March 2022 was used as the main explanatory factor. We found that one additional excess death per 10,000 inhabitants in a given region is associated with the probability of worsening of individual's financial wellbeing higher by 4.88-5.72 percentage points. We also conclude that transition to retirement of unemployed people during the pandemic makes them more resilient in terms of their financial wellbeing. Meanwhile, transition to retirement of people employed before the pandemic outbreak is associated with worsened financial wellbeing in 2022.

Introduction

Global crises, including public health emergencies, are in general disruptive for physical, mental, and social wellbeing (Breznau, 2020; Aref, 2024). The outburst of the COVID-19 pandemic brought numerous changes in the daily life of people at all ages. Within a short period, after the abrupt introduction of the stringency measures, society needed to adjust to changing living and working conditions. The macroeconomic consequences of the pandemic in the global perspective were multidimensional, but from the individual perspective, the most relevant concerns were related to health, functioning of healthcare systems, working and

employment conditions, as well as an overall financial instability, resulting in increased relative poverty (Kumar et al., 2023).

Strict labour market policy measures introduced at the beginning of the pandemic have led to an increase in the number of employees working reduced hours or being laid-off (Wang et al., 2022). Many companies also shortened their working hours not only to cut costs, but also to avoid layoffs. Such decisions were mainly independent of the employees who needed to adjust their needs to the new working environment. Moreover, due to the global health emergency, multiple companies have decided to shift to hybrid or remote work, which has blurred the boundary between work and personal life (Demetriades et al., 2023), but has also had consequences for household expenditure, such as cost of commuting to the workplace, eating outside etc. The most vulnerable individuals aged 50+ continued to work reduced hours even after the incipient pandemic phase when many lockdown measures were relaxed (Börsch-Supan et al., 2023).

The COVID-19 crisis also resulted in a global trend of increased job losses and unemployment, affecting predominantly such sectors as leisure and hospitality, construction, trade or transportation. According to the Bureau of Labor Statistics of the United States, all of the nine industry super-sectors of the American economy have experienced employment reduction, relative to the pre-pandemic situation (Weinstock, 2021). Depending on a sector, company's or individual's situation, job losses were either temporary or permanent. The pandemic influenced mainly small businesses, which were not able to withstand prolonged closures and reduced customer demand. According to Eurostat data, the job losses in France, Germany, Italy and Spain accounted for 1.25-2 million workers in the most affected sectors. In terms of differences by age, the pandemic affected primarily employment rates of the youngest European workers. Nevertheless, job contract type seemed to be a more relevant factor than age in differentiating between individuals based on their vulnerability to job loss (Ando et al., 2022).

The widespread wage cuts and loss of bonuses have also been observed, leading to higher income losses and an increased risk of poverty (Bamieh & Ziegler, 2020). The severity of pandemic-related financial problems is reflected in the scale of various supranational and governmental aid programmes, including stimulus packages – launched to support individuals and businesses, to address the job and income losses. For instance, the European Union implemented its Recovery and Resilience Facility (RRF) as part of its broader recovery plan, NextGenerationEU, to address the economic and social impact of the pandemic. After being approved in 2020, the RRF has allocated EUR 723.8 billion in loans and grants to support reforms and investments undertaken by member states (European Commission, 2020).

Furthermore, individual's financial situation may be related not only to the reduced income, but also to excess costs associated with post-COVID-19 conditions. In their study, based on the American IQVIA PharMetrics Plus database, Pike et al. (2023) found that these costs were higher among older adults. Higher post-COVID-19-related costs were especially incurred by males despite the fact that a lower percentage of them was reported to incur such costs at all (as compared to females) – indicating an association between this type of costs with a greater risk of severe COVID-19 outcomes (Pastor-Barriuso et al., 2020). At the same time, even in highly developed countries, older individuals often do not have sufficient savings to cover the costs of the formally provided long-term care services (Brugiavini et al., 2017). Therefore, weakening of social ties related to forced social distancing or indirect pandemic-related lifestyle changes (including, for instance, multi-local living arrangements) might constitute a further burden for older adults (Greinke & Lange, 2022), due to the loss of informal care provision, and other forms of intergenerational informal support.

At the individual level, changes to financial stability, employment and working patterns as well as weakening of social ties contributed to a higher risk of deterioration of financial wellbeing of older adults. This study focuses on changes to financial wellbeing of individuals aged 51+ during pandemic. Given that the intensity of COVID-19 cases, and the consequences of stringency measures varied not only at the national level, but also regionally, in the article we are controlling for regional excess mortality differences. Studying people aged 50 year or over also needs a broader demographic context, including life expectancy changes, importance of containment policies or investments in health insurance programmes. Hence, economic situation, health inequalities and geriatric syndromes are closely related (Stolz et al., 2016), and older adults often face difficult financial decisions, while at the same time coping with health problems (Asebedo et al., 2018). For instance, according to the West Health-Gallup survey conducted in Autumn 2021, 24% of American adults aged 50-64 considered healthcare expenses a major burden. Simultaneously, an even higher percentage declared avoiding treatment due to excessive costs of care (Gallup, 2021).

Subjective financial wellbeing is in itself a multifaceted construct. It encompasses an individual's perception of their financial situation, including feelings of financial security, satisfaction with financial status, and stress or anxiety related to finances. Subjective financial wellbeing (measured as financial satisfaction) was found to be a significant predictor of overall life satisfaction, independent of an actual income (Diener & Biwas-Diener, 2002).

Furthermore, the nature of subjective financial wellbeing enables country-to-country (or region-to-region) comparisons, without the necessity of using purchasing power parities. In this

sense, subjective financial wellbeing refers to a notion of social need defined as a perceived lack of appropriate living conditions subjectively felt by individuals (Bradshaw, 1972). Brüggen et al. (2017) have provided a synthetic definition of financial wellbeing, highlighting that it concerns one's subjective view on the possibility to sustain financial freedom as well as current and future standard of living.

Determinants of subjective financial wellbeing are diverse and can be studied at both individual and regional level. Studies have shown that individuals from higher socio-economic backgrounds tend to report higher levels of subjective financial wellbeing due to greater financial resources, access to financial education, higher individual aspirations, more favourable personal values and parental socialization (Xiao et al., 2014, Shim et al., 2009). From a more general perspective, place of birth or residence can impact individuals' socio-economic opportunities (Brüggen et al., 2017). For middle-aged and older adults, household size or the network of contacts with people who can provide possible financial support or lead to additional expenses appears to be relevant as well. Moreover, positive health effects of informal support were found to be more pronounced among elderly receivers of help who have a better financial situation (Wang & Yang, 2022). In short, subjective financial wellbeing results from a complex interplay of micro and macro-level factors.

The association between changes in financial wellbeing in response to shocks and stressors (Bufe et al., 2022), including the COVID-19 pandemic, have been extensively studied to date. Barrafrem et al. (2020) investigated sentiments about the future household's economic situation in a survey from March and April 2020, conducted in the United Kingdom and Sweden with a sampling method based on web panels and platforms. The association between positive perception about one's self-efficacy during pandemic was also studied as a predictor of financial wellbeing in an analysis based on a 2020 American Health and Retirement Study concerning respondents aged 50+ (Chhatwani, 2022). Based on the data from 2020 obtained from the Australian Bureau of Statistics, Sun et al. (2022) explored the influence of the COVID-19 crisis on household finances, depending on a family composition and income.

Focusing on Europe, the literature on changes in financial wellbeing during the COVID-19 pandemic indicates that households in Northern Europe had a lower share of residents with income losses compared to those in Western, Central and Eastern, and especially Southern Europe, with considerable variation within these parts of Europe, especially Central and Eastern Europe where the Czech Republic fared better than Slovakia, Bulgaria or Hungary (Schumacher & Bethmann, 2023). Furthermore, economic vulnerability and financial distress was associated with labour market activity, educational attainment, previous exposure to economic stress,

stringency of containment measures or regional economic inequality. In essence, more vulnerable individuals experienced problems with financial wellbeing more often as the pandemic progressed (Chłoń-Domińczak et al., 2023, Bonfatti et al., 2023).

Given that existing studies either cover a small number of countries or, in case of larger longitudinal surveys, are constrained with the lack of information about post-pandemic financial situation of individuals who responded to the questionnaire before the pandemic, this study addresses an empirical research gap by incorporating the data from Wave 9 of the Survey on Health, Ageing and Retirement in Europe (SHARE) conducted mostly in 2022. More importantly, this analysis, unlike the vast majority of similar existing studies, accounts for regional mortality-related data from up to 550 European and Israeli regions in order to control for a contextual aspect of factors shaping individual financial wellbeing. Addressing this research gap was made possible thanks to the data from the 2024 internal NUTS codes available in the SHARE data.

The aim of this paper is to investigate the association between excess mortality related to COVID-19 pandemic and evolution of subjective financial wellbeing, from the pre-pandemic period to the late 2022, when lockdowns and most strict containment measures were relaxed. The study focuses on changes to financial wellbeing experienced by people aged 51+ in 27 European countries and Israel participating in the Survey on Health, Ageing and Retirement in Europe (SHARE) between two periods: March 2017 – January 2019 and October 2021 – September 2022. This study was prepared as part of the SHARE COVID-19 project which was a special initiative within the broader SHARE framework, specifically designed to assess the impacts of the COVID-19 pandemic on older individuals in Europe, in internationally comparable way.

The paper is organised as follows. It starts with the description of the data and methods with the special focus on the method of disaggregation of the regional-level information of SHARE respondents' residence. Then, descriptive analysis shows the patterns of changes in subjective financial wellbeing during the COVID-19 pandemic in 27 European countries and Israel. Subsequently, econometric analysis is performed in order to show the association between mean weekly excess mortality and financial resilience in analysed countries. We also present visualization of the regional-level excess mortality using QGIS software. Finally, conclusion and discussion of the results are provided.

Data and methods

In the paper we used data on subjective financial wellbeing (or distress) from the Survey of Health Ageing and Retirement in Europe (SHARE), that is assessed based on the difficulty to make ends meet financially, taking into account household's total monthly income. We used data from Wave 7 (March 2017 – January 2019), Wave 8 COVID-19 (or Corona 1) Survey (June 2020 – September 2020), Wave 9 COVID-19 (or Corona 2) Survey (June 2021 – August 2021), as well as Wave 9 (October 2021 – September 2022). Standard control variables used in the analysis relate to the socio-demographic characteristics of SHARE respondents from Wave 7.[1]

Data on excess mortality during the COVID-19 pandemic at the regional level was also used as explanatory variable. It was retrieved from the Eurostat and Israel Central Bureau of Statistics. Regional-level excess mortality is expressed as the mean of weekly mortality rate (per 10,000 inhabitants) from June 2021 until March 2022 (the timespan roughly corresponding to the period of increased mortality associated with the spread of Delta and Omicron SARS-CoV-2 variants (Johns Hopkins Coronavirus Resource Center, 2023)) compared to the average weekly mortality rate from 2014-2019.

In order to combine SHARE and Eurostat data in the analysis, SHARE respondents were assigned with regions from which they were sampled or, in case of the lack of information about sampling unit, regions of their accommodation. Obtaining the information about regions was based on several sources, the main one being the internal NUTS codes release for the SHARE-COVID19 project – granting the information about NUTS 3 codes of respondents (at sampling). Secondary source of regional-level information, allowing for even further disaggregation into regions smaller than NUTS 3 in the case of Cyprus, Luxembourg and Malta, included two modules of SHARE database (Housing Generated-Variable and Retrospective Accommodation modules) (Stuck et al., 2024). The last and additional source of information on respondent's region was the language in which the questionnaire was conducted. It was especially useful in the disaggregation of Israel (assigning Arab-speaking respondents with no information about the region of residence available from other sources to the Northern District of the country, and Russian-speaking respondents to the Southern District[2]) as well as Baltic countries (several

[1] Wave 8 data was excluded from the analysis because of the disruption of its fieldwork, with only 70 percent of longitudinal interviews conducted before the pandemic outbreak in March 2020.

[2] The number of Arab citizens of the internationally recognized parts of Israel is the highest in the Northern District. Assigning Russian-speaking Israeli respondents with no information about the region of residence to the Southern District constituted a strong assumption. This assumption was related to a large number of Russian-speaking Israelis living in Ashdod and Be'er Sheva – major cities of this region (having the highest absolute numbers of Russian-speaking people in Israel just after Haifa).

Russian-speaking respondents from Latvia not assigned to any region were assigned to Latgale region, while those from Estonia – to the Ida-Viru county), Belgium and Switzerland.

The disaggregation was performed in two different ways. In the first one, 28 SHARE countries were divided into 125 regions in an attempt to ensure the balance between the minimum sample size condition, as well as historical- and economic development level similarity. This disaggregation was performed in order to visualize the data in the descriptive analysis part of this work. The second disaggregation was aimed at obtaining as minor units as possible while ensuring that the Eurostat information about excess mortality is available at the same level, in order to use these units in the econometric analysis involving mixed-effects two-level logistic regression models. This disaggregation included 550 regions, and it was additionally used in the selection of the timespan of excess mortality variable, based on the correlation between individual-level subjective financial wellbeing and assigned regional-level excess mortality. The timespan with the highest correlation of the mean, median and maximum weekly mortality anomaly with the household's difficulty to make ends meet financially was selected.

In the descriptive part of the analysis, we compared shares of respondents from Wave 7, Corona 1, Corona 2 and Wave 9 of SHARE, that report financial stress. Depending on the wave of SHARE, 118-125 regions were included in the analysis. The econometric part of the analysis was based on generalised partial proportional odds ordered logistic regressions and simple binary logistic regressions. Both types of regressions were estimated using two different techniques accounting for heteroscedasticity across regions: clustering of standard errors at the regional level, and two-level modelling. Different versions of disaggregation were used – into 106 or 507 regions. In order to further check the structural validity of the models, different specifications were applied accounting for income, experience of job loss during the pandemic and the pre-pandemic economic status, which further modified the number of respondents and regions included in the analysis. Furthermore, generalised partial proportional odds ordered logistic regressions were estimated using cross-sectional individual weights from SHARE Wave 7. Proportional-odds and unweighted versions of the models were estimated as well at the initial stage of the analysis and further contributed to an extensive robustness check performed in this study.

QGIS software was also used to visualise the main explanatory variable from econometric models, that is average weekly excess mortality calculated from June 2021 to March 2022 for 506 regions.

Descriptive analysis

In this part of the analysis, we investigated changes of subjective financial wellbeing in 125 regions of SHARE countries in the pre-pandemic, pandemic and post-pandemic periods.

Figure 1 illustrates percentages of respondents stating that, considering their total monthly income, they found it difficult or very difficult to make ends meet (among all respondents answering the question). The lines marked in orange indicate an increase in the percentage of people declaring difficulties in making ends meet between 2017 (Wave 7) and 2022 (Wave 9). Lines marked in grey refer to the decrease in this percentage, i.e. an improvement in subjective financial wellbeing. These percentages account for individual cross-sectional weights from each of the four Waves of SHARE used in this analysis – Wave 7, Corona 1 Survey, Corona 2 Survey, and Wave 9 respectively. Since the information about the difficulty to make ends meet was not directly available for all Waves in case of Austria (which conducted its Corona 1 Survey later than other countries) and the Netherlands (which have conducted a mixed mode experiment instead of a regular Wave 7), four Austrian and three Dutch regions were not presented in Figure 1, that covers 118 regions.

Figure 1 shows that, between Wave 7 and 9, the average subjective financial wellbeing improved in the majority of regions – 89 out of 118 (93 out of 122 including Austria). At the same time, the share of individuals indicating the difficulty to make ends meet increased by more than 5 percentage points in only 10 out of 118 regions.

The financial wellbeing worsened between 2017 and 2022 mainly in less economically developed regions of Southeast and Central Europe (Northern Greece, Eastern Hungary, Central Slovakia, Eastern Slavonia in Croatia, Romanian Wallachia, Western Moldova, Dobruja, Southern Transylvania and Northern Bulgaria), poorer parts of Northern and Southern Israel, as well as regions comprising large urban areas, especially the ones with the highly positive net migration rate (Lake Geneva Region, Ticino, Piedmont, Provence-Alpes-Côte d'Azur, Alsace, Helsinki-Uusimaa, Tallinn and Southern Luxembourg). At the same time, regions which experienced the largest improvement include moderately developed units (at European scale) with a relatively high Human Development Index (at least part of which seems to successfully converge to Western Europe): Malta, Central and Western Slovenia, Central Latvia, Northern and Central Spain, Central and Eastern Lithuania, Northeast Italy, Central Israel, different parts of Czech Republic, Eastern Poland and Central Portugal.

We also conducted the comparison of regions visualised in Figure 1 with the additionally prepared ranking of regions based on the percentage of respondents indicating that they find it "very difficult" (and not just "difficult") to make ends meet. This comparison shows that the

largest discrepancies between rankings involving the share of respondents with severe difficulties being visibly higher in the highly urbanized or certain Mediterranean regions: Portugal, Paris, Brussels, Vienna, Masovian Voivodeship in Poland, Southern Italy, overseas territories of France, Portugal and Spain, different regions of Germany (Northern, Southwestern parts of the country as well as Southern part of the former German Democratic Republic), Luxembourg, Southern Cyprus, and different regions of Netherlands and Romania (including Bucharest), other parts of Belgium and France, Central Israel and relatively highly developed parts of Spain. Meanwhile, the relative percentage of respondents with great difficulties to make ends meet is particularly low in certain regions characterised with low population at-risk of poverty or social exclusion rate (Central and Western Slovakia, Northern Italy, Western Slovenia, Central Czech Republic, Southern Austria, and different regions of Finland, Sweden, France and Spain), as well as several other regions of Central and Eastern Europe: Hungary, South Eastern Poland, and different regions of Latvia, Lithuania, Croatia and Bulgaria.

Finally, Figure 1 can be analysed in the context of inter-Wave differences originating from the possible COVID-19 influence, as well as methodological differences. In both SHARE Corona Surveys, for some regions, there are large declines and fluctuations in share of people declaring difficulties to make ends meet. These can be a result of actual changes in subjective assessment of financial situation, resulting not only from the change in income, but also expenditure (declining due to the reduced mobility and lockdown). Methodological differences (especially in the data collection) might also in part influence the results – Corona Surveys were administered using computer-assisted telephone interviews (CATI) data collection method, whereas regular SHARE rounds, including Wave 7 and 9, used computer-assisted personal interviews (CAPI).

The comparison of subjective financial situation between Waves 7 and 9 seems to indicate that the situation normalised after fluctuations observed during the COVID-19 pandemic, that can be at least partly attributed to methodological differences. Prevalent lower percentages observed for the vast majority of Central, Western and Northern Europe in Corona Surveys may indicate that the changes of economic status during and after the pandemic might have had a positive effect on the financial situation of people aged 51+. This could be partly associated with the transition to retirement as the crisis-induced risk of income loss during the COVID-19 pandemic in Europe was found to be higher among residents of late working age than among residents of early retirement age (Schumacher & Bethmann, 2023, 237-238).

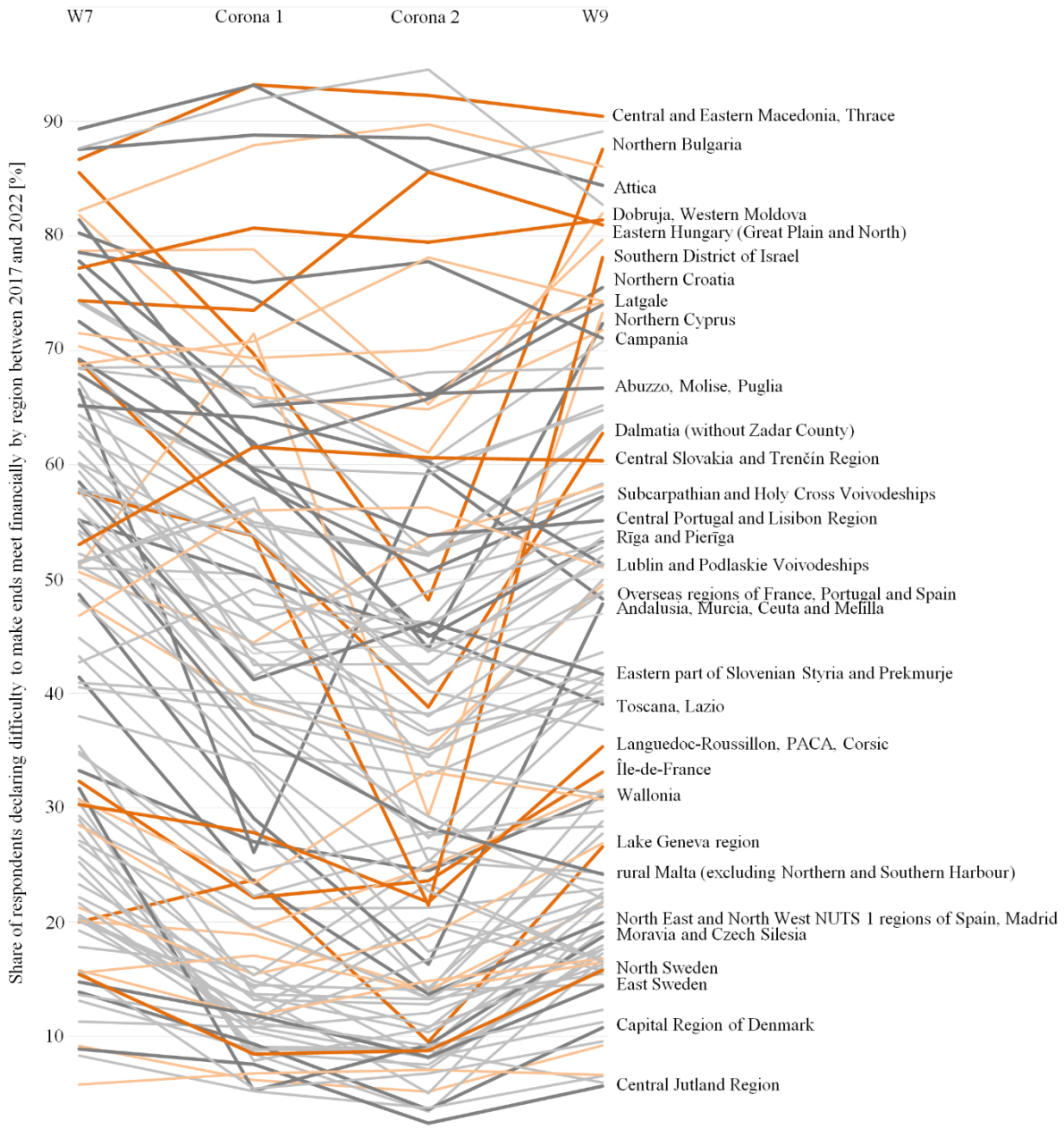

Figure 1: Share of respondents declaring difficulty to make ends meet financially by region between 2017 and 2022.

Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

Econometric analysis

In order to investigate the association between excess mortality and the change in subjective financial wellbeing experienced by people aged 51 or above in SHARE countries during COVID-19 pandemic, four types of logistic regressions were applied: a generalised partial proportional odds ordered logistic regression with standard errors clustered at the regional level, a two-level generalised partial proportional odds ordered logistic regression, as well as two binary logistic regressions (the clustered-standard-errors and the two-level one). In

these regressions, 22,800 individuals (lower level) were nested within 507 regions (higher level) – number of regions being lower than the initially delimitated 550 regions because of the missing data for some respondents, especially from Ireland and Netherlands. Weights used in the model are cross-sectional individual weights derived from Wave 7 of SHARE.

The dependent variable in ordinal regressions (Models 1 and 2) is based on a declaration of how easy it is for respondent's household to make ends meet financially. Based on 4 possible responses in Waves 7 and 9 ("with great difficulty", "with some difficulty", "fairly easily" and "easily"), respondents were assigned 1 of 3 ordinal statuses, namely "worsening", "stabilisation", "improvement", reflecting the nature of the change in their subjective financial wellbeing between Wave 7 and 9. The binary dependent variable in the simple logistic regressions (Models 3 and 4) takes the values of one for respondents whose financial situation worsened in Wave 9 compared to Wave 7, and zero – if the situation improved or remained stable. Subjective financial wellbeing went down for 20.2%, did not change for 52.6%, and improved for 27.2% of respondents.[3]

The main explanatory variable is the regional-level mean weekly excess mortality from June 2021 until March 2022. Apart from this variable, we used the following socio-demographic variables:

- age – expressed in 5-year groups of people aged 51+ and a broader group of individuals aged 91 or more;
- sex;
- educational attainment level – taking 3 values depending on the ISCED 1997 level: pre-primary, primary and lower secondary (1), upper and post-secondary (2), tertiary (3);
- household size – categorical variable with three possible outcomes: 1, 2 and 3+;
- economic status change between 2017 and 2022 – assigning respondents with 9 possible changes of economic status that were the most prevalent in the data, capturing transitions to retirement of respondents who declared in Wave 7 that they were employed, homemakers, unemployed, or permanently sick or disabled.

Two of the regressions, estimated as a check of structural validity and as a means to obtain supplementary conclusions, include the following additional variables:

- economic status in Wave 7 – differentiating between pensioners, employed, self-employed as well as unemployed or remaining inactive respondents;

[3] These shares were calculated using cross-sectional individual weights from Wave 7.

- job loss during the pandemic – binary variable equal to one for respondents who declared in SHARE Corona 2 survey that, since July-September 2020, they either became unemployed, furloughed, laid off, or had to close their businesses;
- total equivalised monthly household's net income of SHARE respondents averaged over all households from each of 106 representative regions into which SHARE countries were divided.

The latter variable, household's net income, was calculated in several steps aimed at overcoming methodological caveats identified in the SHARE data. Initial income values were based on *thinc* and *thinc2* variables from SHARE's Generated-Variable Imputations module. These two variables measure total household income as an aggregation of individual income components (for *thinc* variable) and as a response to a single question concerning household's overall income, after deduction of taxes and contributions, in an average month in a year preceding the interview (for *thinc2* variable), respectively. In the SHARE module, five different imputations of the missing values are provided for each respondent, based on hot-deck method and a fully conditional specification method (De Luca & Li Donni, 2024). To begin with, based on data from Waves 2, 4, 5, 6, 7, 8 and 9, the percentage error between values of both variables was calculated. Percentage errors were calculated two times – firstly, taking as a basis the variable *thinc* and, secondly, *thinc2*. For each variable, respondents were assigned with the value corresponding to the minimum percentage error out of five obtained. Values were dropped when the minimum error was higher than 30 percent. Subsequently, respondents were assigned non-missing values of *thinc*. Whenever it was possible, the resulting missing values were replaced with values of *thinc2*.

The obtained income was then equivalised using data from the SHARE Coverscreen module and the modified OECD equivalence scale (assigning respondents their age at time of the interview). In the next step, extreme outliers of income (1^{st} and 99^{th} centiles) were excluded from analysis.

Subsequently, in order to identify respondents who indicated their yearly and not monthly income, all possible inter-Wave comparisons of income were prepared. If the ratio between values from two given Waves was considered too high or too low, the higher value was divided by 12[4]. This method of accounting for respondents who indicated their yearly and not

[4] Income ratios were considered too high if they indicated a difference higher or lower by a factor of 7 for all possible inter-Wave comparisons between Waves 5-9. Given a relatively long time differential between

monthly income was partially in line with the twofold method based on the approach proposed by Lewandowski and Sałach (2017).

Finally, extreme centiles were eliminated from the income distribution for the second time. It is noteworthy that the selection of subsequent steps of methodological adaptation of income variable, was grounded in the similarity checks (polychoric correlations) between the variable obtained at different stages and a less methodologically problematic variable measuring subjective difficulty to make ends meet financially.

The decision to incorporate the generalised partial proportional odds instead of a more restrictive fully proportional odds model was dictated by the violation of parallel-lines assumption by the majority of the explanatory variables used. In order to test this assumption, Brant test was performed based on differences in coefficients and their respective variances of the fully proportional odds model. Its results, presented in Table 1, indicate that, at the level of significance of 0.05, especially sex, education, household size and mean excess mortality variables violate the assumption. The results of the test, however, were obtained for the unweighted version of the proportional odds model. That is why, additionally, a series of Wald tests on each variable in the generalised ordered logistic regression in its unweighted and weighted version were performed to see whether its coefficients differ significantly across equations. Tests were performed for both two-level and clustered standard errors versions of the generalised ordered logistic models. In both cases, tests for weighted versions of the model revealed that it is primarily the education variable that violates the parallel-lines assumption.

The estimation of several alternative specifications of the model revealed that several other variables might fail to satisfy the parallel-lines assumption – variables having the highest Chi-square statistic in the column corresponding to the weighted regression with clustered standard errors in Table 2. Therefore, ordered logistic models from Tables 3 and 4 have the following set of variables freed from this assumption: education (secondary and tertiary), household size (category "3+", of households with 3 or more members), mean weekly excess mortality as well as economic status change (in case of the category "Homemaker→Retired").

Predictor	Chi-square statistic	p-value
Age (ref.: 51-55)		
56-60	1.26	0.262
61-65	3.01	0.083
66-70	3.78	0.052

fieldworks for pairs of Waves 2 and 8, Waves 4 and 9, as well as Waves 2 and 9, a larger difference was considered too high – corresponding to a factor of 10 and 11, respectively.

71-75	1.73	0.188
76-80	1.55	0.213
81-85	0.24	0.625
86-90	0.48	0.488
91+	1.12	0.290
Gender (ref.: Female)	13.28	0.000
Education (ref.: Pre-primary, primary or lower secondary)		
Upper and post-secondary	16.94	0.000
Tertiary	87.80	0.000
Household size (ref.: 1)		
2	5.61	0.018
3+	0.07	0.785
Economic status change between 2017 and 2022 (ref.: Retired→Retired)		
Employed→Retired	1.24	0.265
Employed→Employed	2.07	0.150
Unemployed→Retired	0.27	0.600
Homemaker→Homemaker	2.51	0.113
Homemaker→Retired	0.17	0.682
Unemployed→Unemployed	0.73	0.393
Sick or disabled→Retired	4.48	0.034
Sick or disabled→Sick or disabled	0.65	0.419
Mean weekly excess mortality	37.40	0.000

Table 1: Results of Brant test for explanatory variables based on the unweighted ordinal logistic regression.

Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

	Clustered standard errors, weighted	Clustered standard errors, unweighted	Multilevel, weighted	Multilevel, unweighted
Predictor	Chi-square statistic (p-value)			
Age (ref.: 51-55)				
56-60	0.04 (0.850)	1.45 (0.228)	1.73 (0.188)	0.90 (0.344)
61-65	0.15 (0.700)	2.90 (0.089)	0.83 (0.363)	2.85 (0.092)
66-70	0.51 (0.474)	4.19 (0.041)	1.04 (0.308)	3.47 (0.062)
71-75	0.09 (0.763)	1.63 (0.202)	0.51 (0.475)	1.53 (0.216)
76-80	0.43 (0.512)	1.48 (0.224)	1.02 (0.313)	1.37 (0.242)
81-85	0.01 (0.910)	0.30 (0.585)	0.00 (0.972)	0.27 (0.600)
86-90	1.80 (0.179)	0.73 (0.393)	2.86 (0.091)	0.65 (0.419)
91+	1.79 (0.180)	0.97 (0.325)	2.47 (0.116)	1.19 (0.275)
Gender (ref.: Female)	0.08 (0.772)	11.23 (0.001)	2.53 (0.112)	13.42 (0.000)
Education (ref.: Pre-primary, primary or lower secondary)				
Upper and post-secondary	7.66 (0.006)	11.72 (0.001)	10.66 (0.001)	17.85 (0.000)
Tertiary	35.45 (0.000)	46.01 (0.000)	34.48 (0.000)	86.40 (0.000)
Household size (ref.: 1)				
2	0.01 (0.930)	3.85 (0.050)	0.29 (0.589)	4.36 (0.037)
3+	3.34 (0.068)	0.21 (0.650)	1.19 (0.275)	0.26 (0.613)
Economic status change between 2017 and 2022 (ref.: Retired→Retired)				
Employed→Retired	0.15 (0.701)	1.15 (0.284)	0.02 (0.900)	1.07 (0.300)
Employed→Employed	0.74 (0.391)	1.43 0.023)	0.72 (0.395)	2.07 (0.150)
Unemployed→Retired	0.01 (0.911)	0.29 (0.587)	0.17 (0.682)	0.39 (0.534)
Homemaker→Homemaker	0.90 (0.343)	1.35 (0.246)	2.87 (0.090)	4.38 (0.036)
Homemaker→Retired	2.46 (0.116)	0.16 (0.691)	1.97 (0.161)	0.16 (0.692)
Unemployed→Unemployed	0.40 (0.529)	0.75 (0.387)	0.09 (0.761)	0.68 (0.410)
Sick or disabled→Retired	0.13 (0.715)	3.47 (0.062)	1.55 (0.213)	3.70 (0.054)
Sick or disabled→Sick or disabled	0.43 (0.510)	0.60 (0.439)	0.23 (0.632)	0.69 (0.405)
Mean weekly excess mortality	1.86 (0.172)	13.69 (0.000)	0.79 (0.373)	20.37 (0.000)

Table 2: Results of Wald test for the proportional odds assumption performed for explanatory variables.
Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

Both coefficients (β) and average marginal effects (AME) were estimated for each regression. The main results indicate that lower regional-level excess mortality is associated with higher odds ratio for improved financial wellbeing in 2022 (as compared to 2017).

Average marginal effects (AME) indicate that, on average, an increase in the mean weekly excess mortality from June 2021 until March 2022 greater by 1 additional excess death per 10,000 inhabitants in a given region is associated with the probability of individual's subjective financial wellbeing changing for the worse (between 2017 and 2022) higher by 4.96 percentage points. Considering that such 1-excess-death increase corresponded to a relatively large change in excess mortality, this result indicates a relatively large effect. In order to visualise in more detail how significant this increase is, it should be noted that 119 out of 507 regions (12.9% of the analysed areas in terms of population[5]) experienced an increase of at least 1 mean weekly excess death per 10,000 inhabitants between late spring and autumn 2021[6]. At the same time, 32 out of 507 regions[7] experienced an increase of at least 2 mean weekly excess deaths per 10,000 inhabitants.

Importantly, an alternative model containing 106 representative regions (derived from 175 units presented in *Descriptive analysis* part and reduced depending on the availability of data on mortality from Eurostat), leads to very similar results: according to AME, the influence of excess mortality on financial wellbeing amounts to 5.12 percentage points on average.

These findings are reiterated by the comparison of percentages of different groups of respondents whose financial wellbeing worsened between 2017 and 2022. This percentage was 20.2% for all SHARE respondents. Meanwhile, it amounted to 23.5% in case of respondents from 119 regions where the pandemic was the most severe (excess mortality increase exceeding 1 excess death per 10,000 people between late spring and autumn 2021). The analogical percentage was 19.8% for SHARE respondents from regions where the COVID-19 pandemic was less severe.[8]

Comparison of marginal effects for different regressors indicates that the impact of the pandemic severity on subjective financial wellbeing is rather modest compared to the impact

[5] Additional analysis, using 106 bigger regions instead of 507 units, indicated that a similar percentage (11.4%) of the population of SHARE countries inhabited regions where the mean weekly excess mortality increased by more than 1 excess death per 10,000 inhabitants.
[6] More specifically, compared periods were: late May – mid-June 2021, and late October – early December 2021.
[7] Regions where the increase of mean weekly excess mortality was larger than 2 deaths per 10,000 people were mainly located in Bulgaria, but also in Romania, Northeast Poland and East Hungary.
[8] These statistics were based on the disaggregation into 507 regions. If we were to calculate these percentages for 106 larger regions, the share of respondents (whose financial situation worsened) from 19 regions where the pandemic was most severe would amount to 24.2%. The analogical percentage of respondents from the remaining regions would be equal to 19.7%.

exerted by education and income. A one-standard-deviation change in excess mortality corresponds to 1.5 percentage-point increase in the probability of worsened subjective financial wellbeing between 2017 and 2022. Similarly, a one-standard-deviation increase in education distribution[9] is associated with a decrease of the said probability amounting to 2.6 percentage points. Additional models including equivalised net income showed that the influence of physical income on subjective financial wellbeing is, intuitively, even higher – of at least 4.1 percentage points. It should be noted, however, that after accounting for household income, the average influence on subjective financial wellbeing of one-standard deviation change in mean weekly excess mortality on subjective financial wellbeing becomes negligible – of 0.3 (Model 5) or 0.4 percentage points (Model 6).

The association between mean weekly excess mortality per 10,000 people from June 2021 until March 2022 and income is clearly visible at the regional level. Map from Figure 2, prepared using the QGIS software, visualises the values of the excess mortality variable used in the econometric analysis (Models 1-4). Regions marked in white indicate the lack of SHARE respondents from a given region. Mean weekly excess mortality in French overseas regions not presented in the map would amount to 0.503 additional deaths per 10,000 people. Map indicates that mortality anomaly was higher in many regions characterised with relatively lower economic development level. Income calculated at the regional level for the same regions based on SHARE data is highly correlated with excess mortality calculated for different periods of increased mortality (August 2020 – February 2021, August 2021 – February 2022, March 2020 – August 2021): Pearson's correlation coefficient ranges from -0.65 to -0.75.

[9] For the purpose of obtaining this statistic, education was added to the model as a quasi-continuous variable taking 7 possible values depending on the ISCED 1997 level.

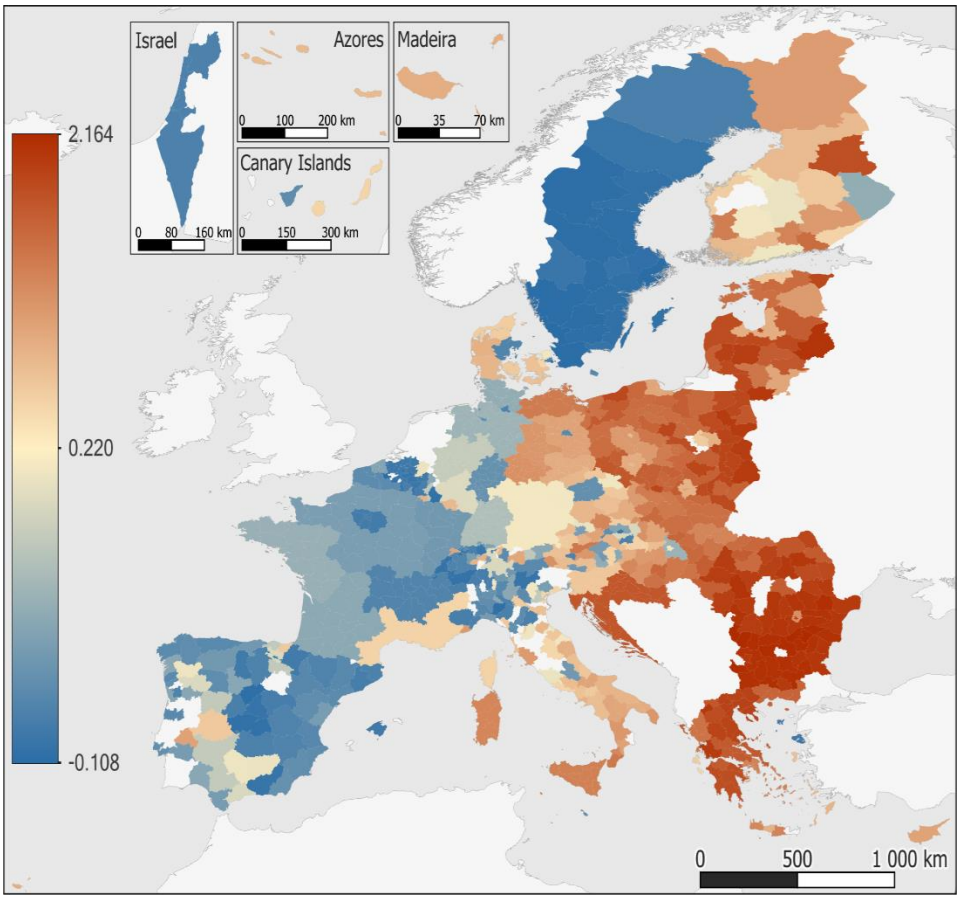

Figure 2: Mean weekly excess mortality from June 2021 until March 2022 in 506 regions used in the econometric analysis.
Source: Eurostat, Israel Central Bureau of Statistics (using QGIS software).

The variable reflecting age categories is insignificant. However, consistent changes in the sign of AMEs in Models 1-3 for higher age categories might point at a possible U-shaped association between age and individual's financial resiliency during COVID-19 pandemic (financial situation of respondents aged 86 or over is likely more stable than that of their younger counterparts). Nevertheless, the prevalent negative signs of AMEs indicate that individuals who were younger when pandemic struck might find it easier to cope with the pandemic in the context of financial wellbeing.

Signs of coefficients related to household size variable in weighted regressions (Model 1 and 2) indicate that the group of the largest household (with 3 and more members) are the most financially resilient during crisis. Interestingly, single-person households seemed to be more resilient than two-person households. The latter effect was found to be significant in the two-level generalized ordered logistic regression (Model 2).

Inclusion of economic status change between 2017 and 2022 indicates that it had an impact on the financial status of people 51+. First, the transition to retirement of unemployed people during the pandemic seems to make them more resilient in terms of their financial

wellbeing. In the two-level regression (Model 2) this positive effect of retirement is also visible for respondents who were permanently sick or disabled. On the other hand, transition to retirement had negative impact on the situation of people who were employed before the COVID-19 outbreak.

In order to account for physical health and labour market differences, we added the index of Activities of Daily Living, variables reflecting economic status in 2017 and 2022, working shorter or longer hours during pandemic, as well as switching to remote work during pandemic. These variables turned out to be insignificant, so in the final specification we applied standard control variables related to demographic and labour-related situation, as presented below.

	Financial wellbeing change		
	β (ref.: Improvement)		AME for situation
Variables	Worsening	Stabilization	becoming worse
Age (ref.: 51-55)			
56-60	0.107	0.107	0.017
	(0.130)	(0.130)	(0.021)
61-65	0.0839	0.0839	-0.013
	(0.123)	(0.123)	(0.020)
66-70	-0.00193	-0.00193	0.0003
	(0.140)	(0.140)	(0.023)
71-75	-0.0630	-0.0630	0.010
	(0.133)	(0.133)	(0.022)
76-80	0.126	0.126	-0.020
	(0.163)	(0.163)	(0.026)
81-85	0.0223	0.0223	-0.004
	(0.145)	(0.145)	(0.023)
86-90	-0.0240	-0.0240	0.004
	(0.195)	(0.195)	(0.032)
91+	-0.239	-0.239	0.041
	(0.269)	(0.269)	(0.048)
Gender (ref.: Female)	-0.00377	-0.00377	0.00059
	(0.0723)	(0.0723)	(0.0114)
Education (ref.: Pre-primary, primary or lower secondary)			
Upper and post-secondary	0.154	-0.134	-0.026
	(0.103)	(0.0923)	(0.017)
Tertiary	0.470***	-0.350***	-0.071***
	(0.118)	(0.107)	(0.018)
Household size (ref.: 1)			
2	-0.0922	-0.0922	0.015
	(0.0622)	(0.0622)	(0.010)
3+	0.0199	0.207*	-0.003
	(0.106)	(0.109)	(0.016)
Economic status change between 2017 and 2022 (ref.: Retired→Retired)			

Employed→Retired	-0.0985	-0.0985	0.0155
	(0.117)	(0.117)	(0.018)
Employed→Employed	-0.00658	-0.00658	0.00104
	(0.119)	(0.119)	(0.019)
Unemployed→Retired	0.538**	0.538**	-0.085***
	(0.228)	(0.228)	(0.036)
Unemployed→Unemployed	-0.222	-0.222	0.035
	(0.423)	(0.423)	(0.067)
Homemaker→Retired	-0.0598	0.241	0.009
	(0.222)	(0.186)	(0.035)
Homemaker→Homemaker	0.0142	0.0142	-0.002
	(0.119)	(0.119)	(0.019)
Sick or disabled→Retired	-0.0131	-0.0131	0.002
	(0.238)	(0.238)	(0.037)
Sick or disabled→Sick or disabled	0.172	0.172	-0.027
	(0.249)	(0.249)	(0.039)
Mean weekly excess mortality	-0.315***	-0.118	0.050***
	(0.114)	(0.169)	(0.018)
Constant	1.329***	-0.905***	
	(0.178)	(0.159)	
Observations		22,303	
Regions		507	
Log-likelihood		-22250.874	

Table 3. Model 1: Generalized partial proportional odds ordered logistic regression with robust standard errors clustered for 507 regions estimated using individual weights from Wave 7.
*** p<0.01, ** p<0.05, * p<0.1
Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

Coefficients and standard errors of Model 2, the two-level generalised partial proportional odds ordered logistic regression with weights from Wave 7, are presented below. The binomial family was used in a calculation of conditional densities of all variables. It is noteworthy that the usage of individual-level weights, for the lowest level in the multilevel model, should be used with caution. This is why Model 2 is treated as a robustness check. AME for the mean weekly excess mortality is slightly higher than the one derived from Model 1.

	Financial wellbeing change		
	β (ref.: Improvement)		AME for situation
Variables	Worsening	Stabilization	becoming worse
Age (ref.: 51-55)			
56-60	0.0831	0.0831	-0.0124
	(0.1074)	(0.1074)	(0.0195)
61-65	0.2059	0.2059	-0.0309
	(0.1409)	(0.1409)	(0.0293)
66-70	0.1413	0.1413	-0.0212
	(0.1410)	(0.1410)	(0.0269)
71-75	0.1288	0.1288	-0.0193

	(0.1436)	(0.1436)	(0.0268)
76-80	0.2414	0.2414	-0.0363
	(0.1598)	(0.1598)	(0.0336)
81-85	0.1741	0.1741	-0.0261
	(0.1572)	(0.1572)	(0.0306)
86-90	0.0810	0.0810	-0.0121
	(0.2134)	(0.2134)	(0.0355)
91+	-0.22449	-0.22449	0.0335
	(0.2907)	(0.2907)	(0.0353)
Gender (ref.: Female)	0.0831	-0.0433	0.00647
	(0.1074)	(0.0593)	(0.0065)
Education (ref.: Pre-primary, primary or lower secondary)			
Upper and post-secondary	0.2216***	-0.1049	-0.0157**
	(0.0698)	(0.0807)	(0.0082)
Tertiary	0.4127***	-0.3841***	-0.0572***
	(0.0939)	(0.1056)	(0.0012)
Household size (ref.: 1)			
2	-0.0984*	-0.0984*	0.0147***
	(0.0593)	(0.0593)	(0.0052)
3+	-0.0894	-0.0028	-0.0004
	(0.0028)	(0.0805)	(0.0121)
Economic status change between 2017 and 2022 (ref.: Retired→Retired)			
Employed→Retired	0.0733	0.0733	-0.0110
	(0.0768)	(0.0768)	(0.0145)
Employed→Employed	0.1193	0.1193	-0.0179
	(0.0958)	(0.0958)	(0.0191)
Unemployed→Retired	0.6671***	0.6671***	-0.1008*
	(0.2041)	(0.2041)	(0.0569)
Unemployed→Unemployed	-0.4276	-0.4276	0.0636
	(0.3879)	(0.3879)	(0.0420)
Homemaker→Retired	-0.3070*	0.0032	0.0005
	(0.1721)	(0.1904)	(0.0290)
Homemaker→Homemaker	-0.0038	-0.0038	0.0006
	(0.0916)	(0.0916)	(0.0137)
Sick or disabled→Retired	0.0717	0.0717	-0.0107
	(0.1912)	(0.1912)	(0.0318)
Sick or disabled→Sick or disabled	0.1762	0.1762	-0.0264
	(0.2568)	(0. 2568)	(0.0458)
Mean weekly excess mortality	0.2159***	0.3804***	0.0572**
	(0.0663)	(0.0708)	(0.0254)
Constant	0.7723***	-1.5726***	
	(0.1551)	(0.1560)	
Var(Region)	0.1893***		
	(0.0087)		
Observations	22,303		
Regions	507		
Log-likelihood	-46891156		

Table 4. Model 2: Two-level generalised partial proportional odds ordered logistic regression with robust standard errors clustered for 507 regions estimated using weights from Wave 7.

*** p<0.01, ** p<0.05, * p<0.1
Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

Estimates of Models 3 and 4 strengthen the results stemming from Models 1 and 2. Firstly, higher mean weekly excess mortality from 2021 in the area of residence goes in line with a greater likelihood of one's subjective financial wellbeing going down in 2022 compared to 2017. AMEs are similar to the ones from ordinal regressions (in both cases slightly weaker): AME for excess mortality in Model 1 is similar to its binary analogue with clustered standard errors, Model 3. Meanwhile, Model 2 is similar to its multilevel binary analogue, Model 4. Secondly, higher education is beneficial in terms of coping with the pandemic. Similarly, pre-retirement age and transition from unemployment to retirement seem beneficial for individuals' financial resilience. Estimates calculated for gender are insignificant, and their signs are inconsistent with the ones from ordered logistic regressions, indicating that the gender's relevance is first and foremost null.

	Financial wellbeing worsening	
Variables	β	AME
Age (ref.: 51-55)		
56-60	-0.152*	-0.025*
	(0.0831)	(0.0139)
61-65	-0.114	-0.019
	(0.0928)	(0.0156)
66-70	-0.102	-0.168
	(0.0985)	(0.0165)
71-75	-0.0698	-0.012
	(0.102)	(0.0171)
76-80	-0.169	-0.027
	(0.106)	(0.0175)
81-85	-0.0830	-0.014
	(0.115)	(0.0191)
86-90	0.0781	0.014
	(0.142)	(0.0246)
91+	0.208	0.037
	(0.250)	(0.0464)
Gender (ref.: Female)	-0.0262	-0.0042
	(0.0373)	(0.0060)
Education (ref.: Pre-primary, primary or lower secondary)		
Upper and post-secondary	-0.0919**	-0.0152**
	(0.0417)	(0.0069)
Tertiary	-0.2251***	-0.0358***
	(0.0499)	(0.0079)
Household size (ref.: 1)		
2	0.0698*	0.0112*

	(0.0391)	(0.0063)
3+	0.00033	0.00005
	(0.0532)	(0.0084)
Economic status change between 2017 and 2022 (ref.: Retired→Retired)		
Employed→Retired	0.285***	0.049***
	(0.0630)	(0.0113)
Employed→Employed	-0.106	-0.016
	(0.0792)	(0.0121)
Unemployed→Retired	-0.413**	-0.059***
	(0.185)	(0.0231)
Unemployed→Unemployed	0.0649	0.0106
	(0.230)	(0.038)
Homemaker→Retired	-0.00113	-0.00018
	(0.121)	(0.0194)
Homemaker→Homemaker	0.00733	0.00117
	(0.0893)	(0.0143)
Sick or disabled→Retired	-0.0455	-0.0072
	(0.138)	(0.021)
Sick or disabled→Sick or disabled	-0.0895	0.0242
	(0.159)	(0.024)
Mean weekly excess mortality	0.304***	0.0488***
	(0.0838)	(0.0134)
Constant	-1.320***	
	(0.113)	
Var(Constant)	0.163***	
	(0.0260)	
Observations	22,303	
Number of regions	507	
Log-likelihood	-11147.965	

Table 5. Model 3: Two-level binary logistic regression.
*** p<0.01, ** p<0.05, * p<0.1
Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

	Financial wellbeing worsening	
Variables	β	AME
Age (ref.: 51-55)		
56-60	-0.135	-0.216***
	(0.182)	(0.030)
61-65	-0.147	-0.023
	(0.199)	(0.033)
66-70	-0.111	-0.018
	(0.197)	(0.032)
71-75	0.00764	0.00128
	(0.210)	(0.035)
76-80	-0.237	-0.037
	(0.225)	(0.036)
81-85	-0.0545	-0.0089
	(0.221)	(0.036)

86-90	0.198	0.035
	(0.249)	(0.044)
91+	-0.149	-0.024
	(0.459)	(0.071)
Gender (ref.: Female)	-0.0127	-0.0020
	(0.0649)	(0.0102)
Education (ref.: Pre-primary, primary or lower secondary)		
Upper and post-secondary	-0.147*	-0.024*
	(0.0875)	(0.0146)
Tertiary	-0.456***	-0.069***
	(0.110)	(0.016)
Household size (ref.: 1)		
2	0.0826	0.0131
	(0.0747)	(0.0118)
3+	-0.0171	-0.0026
	(0.101)	(0.016)
Economic status change between 2017 and 2022 (ref.: Retired→Retired)		
Employed→Retired	0.0465	0.0075
	(0.117)	(0.019)
Employed→Employed	-0.0989	-0.0153
	(0.166)	(0.025)
Unemployed→Retired	-0.500**	-0.0685**
	(0.245)	(0.030)
Unemployed→Unemployed	0.0887	0.0145
	(0.462)	(0.077)
Homemaker→Retired	0.0405	0.0065
	(0.163)	(0.027)
Homemaker→Homemaker	-0.0965	-0.0150
	(0.149)	(0.023)
Sick or disabled→Retired	0.0563	0.0091
	(0.269)	(0.044)
Sick or disabled→Sick or disabled	-0.0393	-0.0062
	(0.299)	(0.047)
Mean weekly excess mortality	0.331***	0.0521***
	(0.115)	(0.0179)
Constant	-1.249***	
	(0.227)	
Observations	22,303	
Number of regions	507	
Log-likelihood	-25613720	

Table 6. Model 4: Binary logistic regression with robust standard errors clustered for 507 regions.
*** p<0.01, ** p<0.05, * p<0.1
Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

Models 5 and 6 were performed to measure the interaction between excess mortality and income variable (differentiated at the regional level). Model 5 constitutes a simple modification of Model 1 assuming different disaggregation into 106 larger representative

regions, whereas Model 6 is a two-level regression including variables accounting for the experience of job loss during pandemic and the pre-pandemic economic status. Despite the large difference in the number of observations and regions, both models show that excess mortality loses its significance after accounting for income, the impact of which is similar in both models. It was also found that the job loss during the pandemic increased the probability of the financial situation worsening.

	Financial wellbeing change		
	β (ref.: Improvement)		AME for situation
Variables	Worsening	Stabilization	becoming worse
Age (ref.: 51-55)			
56-60	0.107	0.107	-0.0169
	(0.129)	(0.129)	(0.0205)
61-65	0.102	0.102	-0.0161
	(0.122)	(0.122)	(0.0196)
66-70	0.0172	0.0172	-0.0028
	(0.135)	(0.135)	(0.0220)
71-75	-0.0358	-0.0358	0.0059
	(0.131)	(0.131)	(0.0215)
76-80	0.160	0.160	-0.0249
	(0.157)	(0.157)	(0.0246)
81-85	0.0550	0.0550	-0.0088
	(0.142)	(0.142)	(0.0228)
86-90	-0.00347	-0.00347	0.0006
	(0.193)	(0.193)	(0.0315)
91+	-0.235	-0.235	0.0409
	(0.275)	(0.275)	(0.0495)
Gender (ref.: Female)	-0.00545	-0.00545	0.00086
	(0.0723)	(0.0723)	(0.0114)
Education (ref.: Pre-primary, primary or lower secondary)			
Upper and post-secondary	0.111	-0.0464	-0.0183
	(0.106)	(0.104)	(0.0176)
Tertiary	0.406***	-0.227**	-0.0614***
	(0.126)	(0.111)	(0.0190)
Household size (ref.: 1)			
2	-0.0962	-0.0962	0.0154
	(0.0622)	(0.0622)	(0.0099)
3+	0.101	0.101	-0.0152
	(0.0956)	(0.0956)	(0.0144)
Economic status change between 2017 and 2022 (ref.: Retired→Retired)			
Employed→Retired	-0.0797	-0.0797	0.0125
	(0.110)	(0.110)	(0.0173)
Employed→Employed	0.0207	0.0207	-0.0033
	(0.112)	(0.112)	(0.0176)
Unemployed→Retired	0.564**	0.564**	-0.0888

	(0.222)	(0.222)	(0.0352)
Unemployed→Unemployed	-0.213	-0.213	0.0335
	(0.421)	(0.421)	(0.0661)
Homemaker→Retired	0.106	0.106	-0.0166
	(0.198)	(0.198)	(0.0313)
Homemaker→Homemaker	-0.000373	-0.000373	0.00006
	(0.113)	(0.113)	(0.0179)
Sick or disabled→Retired	0.00219	0.00219	-0.0003
	(0.234)	(0.234)	(0.0368)
Sick or disabled→Sick or disabled	0.193	0.193	-0.0303
	(0.240)	(0.240)	(0.0378)
Mean weekly excess mortality	-0.00722	-0.770***	0.0011
	(0.185)	(0.290)	(0.0291)
Mean income (regions)	1.49e-05**	-2.99e-05***	-2.34e-06**
	(6.89e-06)	(7.78e-06)	(1.08e-06)
Constant	0.970***	-0.257	
	(0.205)	(0.265)	
Observations		22,303	
Regions		106	
Log-likelihood		-22160.421	

Table 7. Model 5: Generalized partial proportional odds ordered logistic regression with standard errors clustered at the regional level estimated using individual weights from Wave 7, including income.
*** p<0.01, ** p<0.05, * p<0.1
Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

	Financial wellbeing worsening	
Variables	β	AME
Age	0.00284	0.00043
	(0.00685)	(0.00103)
Gender (ref.: Female)	0.0724	0.0110
	(0.0795)	(0.0121)
Education (ref.: Pre-primary, primary or lower secondary)		
Upper and post-secondary	-0.103	-0.016
	(0.102)	(0.0163)
Tertiary	-0.332***	-0.0496***
	(0.114)	(0.0173)
Household size (ref.: 1)		
2	0.0447	0.0068
	(0.0896)	(0.0137)
3+	-0.110	-0.0160
	(0.109)	(0.0159)
Economic status in 2017 (ref.: Retired)		
Employed	0.3596	0.0609
	(0.3434)	(0.0626)
Self-employed	-0.0253	-0.0039
	(0.1248)	(0.0191)
Inactive or unemployed	-0.3405**	-0.0475**
	(0.1622)	(0.0218)
Job loss during pandemic	0.2878**	0.0464*

(ref.: No)		
	(0.1493)	(0.0256)
Mean weekly excess mortality	0.0850	0.0128
	(0.194)	(0.0291)
Mean income (regions)	-1.22e-05*	-1.83e-06*
	(6.92e-06)	(1.05e-06)
Constant	-1.368***	
	(0.464)	
Var(Constant)	0.191***	
	(0.0593)	
Observations	4,854	
Number of regions	426	
Log-likelihood	-2334.9002	

Table 8. Model 6: Two-level binary logistic regression, including income, job loss experience and pre-pandemic economic status.
*** p<0.01, ** p<0.05, * p<0.1
Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

Figure 3 summarises the obtained results, presenting AMEs with 95-percent confidence intervals for Models 1-6 in the form of the forest plot. This graph includes AMEs for excess mortality and educational attainment – categories of upper and post-secondary, as well as tertiary education. Figure 3 shows that excess mortality is not significant after accounting for income in the model. As it is shown, upper and post-secondary education becomes insignificant as well, indicating that differences in subjective financial wellbeing between respondents belonging to this education group and those with pre-primary, primary and lower secondary education can be largely explained with income discrepancies. Tertiary education, in all models, is a statistically significant factor associated negatively with worsening of subjective financial wellbeing during the pandemic.

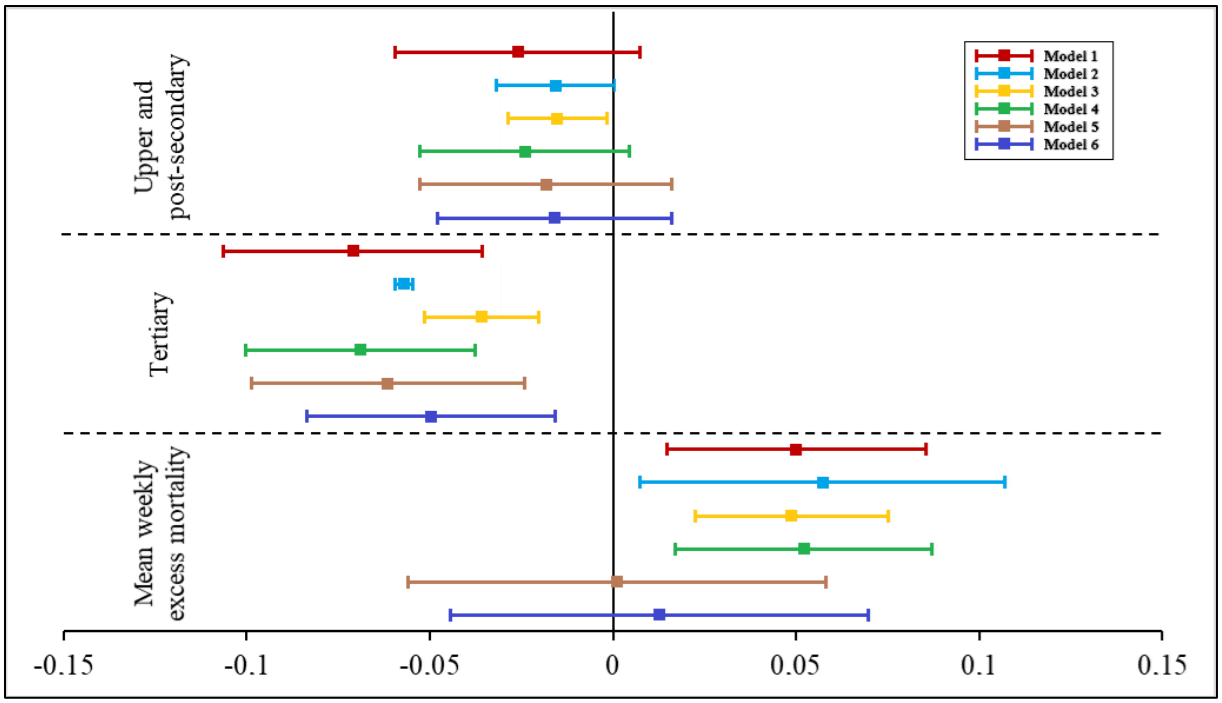

Figure 3: Average marginal effects and 95-percent confidence intervals for models assessing changes in financial wellbeing for education categories (reference category: pre-primary, primary or lower secondary) and mean weekly excess mortality in Models 1-6.
Source: SHARE Wave 7, SHARE Wave 9 and SHARE Corona (W1 & W2), release 8.0.0.

Conclusions

This study aimed to investigate the association between excess mortality related to COVID-19 pandemic and changes to subjective financial wellbeing experienced by SHARE respondents between SHARE Waves 7 and 9.

Descriptive statistical analysis showed that, between 2017 and 2022, the average subjective financial wellbeing improved in 93 out of 122 of the analysed regions. Financial wellbeing worsened mainly in certain less economically developed regions (mainly Greece and Balkans), as well as regions comprising large urban areas, especially the ones with the highly positive net migration rate. At the same time, regions which experienced the largest improvement include relatively moderately developed units (at European scale), seeming to successfully converge to Western Europe, or regions already highly developed compared to the European Union average GDP per capita, such as Western Slovenia.

The comparison of the pre-COVID SHARE Wave 7, two Corona rounds and Wave 9 seems to indicate that the situation returned to a pre-pandemic level, after fluctuations observed during the pandemic, which might be partly attributed to methodological differences, and partly distortions of the usual pattern of financial expenses during the COVID-19 pandemic.

We found that, on average, an increase of the mean weekly excess mortality from June 2021 until March 2022 greater by 1 additional excess death per 10,000 inhabitants in a given

region is associated with the probability of individual's subjective financial wellbeing changing for the worse (between 2017 and 2022) higher by around 5 percentage points. This value ranged from 4.88 to 5.72 depending on the model. During the general global increase in the number of new COVID-19 cases per capita, occurring between late spring and autumn 2021, an increase of at least 1 additional excess death per 10,000 people was reported in areas inhabited by 12.9% of the total population of SHARE countries. Given that 20.2% of respondents experienced worsening of their financial wellbeing (between 2017 and 2022), the impact of pandemic severity on subjective financial wellbeing in Europe and Israel seems large.

Focusing on SHARE respondents from regions where the pandemic was the most severe (excess mortality increase exceeding 1 excess death per 10,000 inhabitants), the percentage of individuals whose financial situation worsened amounted to 23.5-24.2%. This statistic was 19.7-19.8% in case of SHARE respondents from regions where the COVID-19 pandemic was less severe.

Additional explanatory variables indicated that individual's financial resilience during the COVID-19 crisis was very much dependent on household's income and education. We also showed that the transition to retirement of the most vulnerable groups of people (unemployed or disabled) could improve their financial resilience during crisis. On the other hand, transition to retirement or job loss were unfavourable for people who were employed before the COVID-19 outbreak. These results show that the pensions systems have a stabilising role during the crisis period, particularly for people who enter the crisis with already vulnerable situation.

The impact of the severity of the pandemic on the change in subjective financial wellbeing is a complex process, and its assessment can be based on many mediating variables at individual and regional levels. Our analysis presented in this article shows, among many possible correlates, household's financial resources may partly explain this impact (which may be also due to unobserved variables, such as higher quality of healthcare in wealthier regions). In an attempt to partly explain the nature of the impact of the severity of the pandemic on the change in the financial situation, we focused on standard demographic and socio-economic control variables. Our results show that, even when we take into account numerous control variables, the severity of the pandemic still holds a negative impact on the financial wellbeing. Hence, the strong and negative regional-level correlation between economic development and pandemic severity during the second and the third pandemic waves may be due to diverse common factors reflected broadly by the measure of pandemic severity used in this study. The validity of using excess mortality as a measure of the general severity of the pandemic may be

related to the link between mortality anomaly and healthcare quality and accessibility, effectiveness of containment policies, as well as more general society's health.

Econometric part of this study commendably tests various types of models and employs two different regional divisions as a means of checking regressions' structural validity. The coefficient for excess mortality remains similar across different models and regional divisions, demonstrating its robustness. Notably, the main factor influencing the coefficient is the change in specification, such as the addition of income. Aside from these changes, the values of significant coefficients for excess mortality stay within a comparable range across different models. This consistency underscores the reliability of the findings and strengthens the conclusions drawn from the analysis.

One limitation of this study is the fact that the variable reflecting the difficulty to make ends meet financially has only four values. However, its classical coefficient of variation is relatively high (it amounts to 0.36) for SHARE countries (with a positional coefficient of variation based on the absolute median deviation being equal to 0.33). The coefficient is higher than 0.1 which indicates that the variable is suitable for analysis.

A relatively low pseudo-R^2 (not exceeding 0.02) suggests that there are other variables which should be taken into consideration. This indicates a need for additional variables measuring individuals' resilience during the crisis, potentially including their skills and social support (O'Neill & Xiao, 2006). On the other hand, it can be noted that the relatively low pseudo-R^2 is quite common in the studies based on the individual data because of the high variability and complexity of the analysed associations (Long & Freese, 2014).

Methodology used in this study may be a source of inspiration. Future research based on large longitudinal data dealing with the COVID-19 pandemic may account for regional excess mortality – but as an auxiliary variable, to measure in more detail individual-level phenomena, such as transition to retirement or job loss experience that were merely touched upon in this study. Future research may also focus on comparison of the influence of pandemic severity on financial wellbeing and on psychological (or social) wellbeing.

Based on the findings of our study, it is recommended that authorities closely examine the factors contributing to lower financial and overall resilience during the pandemic. At the macro level, this includes evaluating the impact of regional disparities in healthcare accessibility, employment opportunities and socio-economic conditions. Policymakers should prioritize interventions that address these underlying issues to prevent and mitigate the effects of future crises, which require more focused and tailored interventions at a local and regional levels, also considering the characteristics and factors of the regions that were less affected by

the crisis. For societies in the EU regions most affected by the pandemic in terms of excess mortality (in 2021, Bulgaria, Romania, Northeast Poland, East Hungary, East Slovakia, Baltic countries and Northern Greece), it is crucial to identify potential causes such as ineffective healthcare infrastructure, income inequalities, vaccination reluctance (particularly prevalent in Bulgaria, Romania and East Latvia according to SHARE Corona 2 data) and varying public health responses. Addressing these issues could involve targeted public health initiatives, improving healthcare access and quality, vaccination education campaigns, and various policies aimed at fostering socio-economic resilience. Implementing these solutions can help reduce the impact of future health crises and improve overall societal wellbeing.

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References

Ando, S. Balakrishnan, R., Gruss, B., Hallaert, J.-J., Jirasavetakul, L.-B.F., Kirabaeva, K., Klein, N., Lariau, A., Liu, L. Q., Malacrino, D., Qu, H., Solovyeva, A. (2022). *European*

Labor Markets and the COVID-19 Pandemic: Fallout and the Path Ahead. 4. 1-96. 10.5089/9798400200960.087

Asebedo, S. D., Wilmarth, M. J., Seay, M. C., Archuleta, K., Brase, G. L., MacDonald, M. (2018). Personality and Saving Behavior Among Older Adults. The Journal of Consumer Affairs. 53(2). 488-519. 10.1111/joca.12199.

Aref, F. (2024). Analyzing inequalities: a multifaceted perspective of OECD welfare regimes during the Great Recession and the Pandemic. *International Review of Economics*. 71. 1-20. 10.1007/s12232-024-00448-9.

Bamieh, O., Ziegler, L. (2020). How Does the COVID-19 Crisis Affect Labor Demand? An Analysis Using Job Board Data From Austria. *IZA Discussion Papers*. No. 13801. Available at: https://docs.iza.org/dp13801.pdf.

Barrafrem, K., Västfjäll, D., Tinghög, G. (2020). Financial well-being, COVID-19, and the financial better-than-average-effect. *Journal of Behavioral and Experimental Finance*. 28. 100410. 10.1016/j.jbef.2020.100410.

Belloni, M., Meschi, E., Pasini, G. (2016). The effect on mental health of retiring during the economic crisis. *Health Economics*. 25(S2). 126-140. 10.1002/hec.3377.

Bergmann, M.,, Wagner, M., Börsch-Supan, A. (2024). *SHARE Wave 9 Methodology: From the SHARE Corona Survey 2 to the SHARE Main Wave 9 Interview*. SHARE-ERIC: Munich. 10.6103/mv.w09.

Bonfatti, A., Pesaresi, Weber, G., Zambon, N. (2023). *How the first wave of the pandemic affected household finances*. In: *Social, health, and economic impacts of the COVID-19 pandemic and the epidemiological control measures: First results from SHARE Corona Waves 1 and 2*, A. Börsch-Supan, A. Abramowska-Kmon, K. Andersen-Ranberg, A. Brugiavini, A. Chlon-Dominczak, F. Jusot, A. Laferrère, H. Litwin, S. Smolic, G. Weber (Eds.). De Gruyter: Berlin, Boston. 223-230. 10.1515/9783111135908.

Börsch-Supan, A. (2024a). *Survey of Health, Ageing and Retirementbe in Europe (SHARE) Wave 1-8. NUTS codes. Release version: Release 8-0-0*. SHARE-ERIC. Internal data set.

Börsch-Supan, A. (2024b). *Survey of Health, Ageing and Retirement in Europe (SHARE) Wave 9. NUTS codes. Release version: Release 0*. SHARE-ERIC. Internal data set.

Börsch-Supan, A., Kutlu-Koç, V., López-Falcón, D. (2023). *Short-time employment aid during the COVID-19 lockdown: Shortand long-run effectiveness*. In: *Social, health, and economic impacts of the COVID-19 pandemic and the epidemiological control measures: First results from SHARE Corona Waves 1 and 2*, A. Börsch-Supan, A. Abramowska-Kmon, K. Andersen-Ranberg, A. Brugiavini, A. Chlon-Dominczak, F. Jusot, A. Laferrère,

H. Litwin, S. Smolic, G. Weber (Eds.). De Gruyter: Berlin, Boston. 141-148. 10.1515/9783111135908.

Bradshaw, J. (1972). Taxonomy of social need. In: Problems and progress in medical care: essays on current research, G. McLachlan (Ed.). Oxford University Press: London. 73.

Breznau, N. (2020). The welfare state and risk perceptions: the Novel Coronavirus Pandemic and public concern in 70 countries. *European Societies*. 23. 1-14. 10.1080/14616696.2020.1793215.

Brüggen E.C., Hogreve J., Holmlund M., Kabadayi S., Löfgren M. (2017). Financial well-being: A conceptualization and research agenda. *Journal of Business Research*. 79. 228-237. 10.1016/j.jbusres.2017.03.013.

Brugiavini, A., Carrino, L., Orso, C., Pasini, G. (2017). *Vulnerability and Long-term Care in Europe: An Economic Perspective*. Spronger Nature: Cham. 10.1007/978-3-319-68969-2.

Bufe, S., Roll, S., Kondratjeva, O., Skees, S., Grinstein-Weiss, M. (2022). Financial Shocks and Financial Well-Being: What Builds Resiliency in Lower-Income Households? *Social Indicators Research*. 161(1). 379-407. 10.1007/s11205-021-02828-y.

Chhatwani, M. (2022). Personal control and financial well-being among the elderly: Moderating role of the big five. *Personality and Individual Differences*. 184. 111171. 10.1016/j.paid.2021.111171.

Chłoń-Domińczak, A., Holzer-Żelażewska, D., Taracha, M. (2023). *Persistence of economic stress during the COVID-19 pandemic*. In: *Social, health, and economic impacts of the COVID-19 pandemic and the epidemiological control measures: First results from SHARE Corona Waves 1 and 2*, A. Börsch-Supan, A. Abramowska-Kmon, K. Andersen-Ranberg, A. Brugiavini, A. Chlon-Dominczak, F. Jusot, A. Laferrère, H. Litwin, S. Smolic, G. Weber (Eds.). De Gruyter: Berlin, Boston. 201-214. 10.1515/9783111135908.

De Luca, G., Li Donni, P. (2024). *Weights and Imputations in SHARE Wave 9*. In: *SHARE Wave 9 Methodology: From the SHARE Corona Survey 2 to the SHARE Main Wave 9 Interview*, M. Bergmann, M. Wagner, A. Börsch-Supan (Eds.). SHARE-ERIC: Munich. 143-153.

Demetriades, S. Cabrita, J. Eiffe F. F. (2023). *The future of telework and hybrid work*. Eurofound. Publications Office of the European Union: Luxembourg. doi:10.2806/977006.

Diener, E., Biwas-Diener, R. (2002). Will Money Increase Subjective Well-Being? *Social Indicators Research*. 57(2). 119-169. 10.1023/A:1014411319119.

European Commission. (2020). *Recovery and Resilience Facility*. Available at: https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes/recovery-and-resilience-facility_en.

Gallup. (2021). *West Health-Gallup 2021 Healthcare in America Report: COVID-19 Brings Growing Worry About Rising Costs and Inequities in the U.S. Healthcare System*. Available at: https://westhealth.org/wp-content/uploads/2021/12/2021-Healthcare-In-America_West-Health-and-Gallup.pdf.

Greinke, L., Langem L. (2022). Multi-locality in rural areas – an underestimated phenomenon. *Regional Studies, Regional Science*. 9. 67-81. 10.1080/21681376.2021.2025417.

Johns Hopkins Coronavirus Resource Center. (2023). *New COVID-19 Cases Worldwide*. Available at: https://coronavirus.jhu.edu/data/new-cases.

Kumar, R., Srivastava, V., Nand, K. (2023). The Two Sides of the COVID-19 Pandemic. *COVID*. 3. 1746-1760. 10.3390/covid3120121.

Lewandowski, P., Sałach, K. (2017). *Aktywność zawodowa a warunki materialne wśród osób w wieku 50+*. In: *Pokolenie 50+ w Polsce na tle Europy: Aktywność, zdrowie i jakość życia*, M. Myck, M. Oczkowska (Eds.) Centrum Analiz Ekonomicznych: Szczecin. 105-129.

Long, J.S., Freese, J. (2014). *Regression Models for Categorical Dependent Variables Using Stata (3rd ed.)*. Stata Press.

O'Neill, B., Xiao, J. J. (2011). Financial Resiliency Before, During, and After the Great Recession: Results of an Online Study. *Journal of Consumer Education*. 28. 34-43.

Pastor-Barriuso, R., Pérez-Gómez, B., Hernán, M., Pérez-Olmeda, M., Yotti, R., Oteo-Iglesias, J., Sanmartín, J., León-Gómez, I., Fernández-García, A., Fernández-Navarro, P., Cruz, I., Martín, M., Delgado-Sanz, C., Fernández de Larrea, N., León Paniagua, J., Muñoz-Montalvo, J., Blanco, F., Larrauri, A., Pollán, M. (2020). Infection fatality risk for SARS-CoV-2 in community dwelling population of Spain: nationwide seroepidemiological study. *BMJ*. 371. m4509. 10.1136/bmj.m4509.

Pike, J., Kompaniyets, L., Lindley, M. C., Saydah, S., Miller, G. (2023). Direct Medical Costs Associated With Post–COVID-19 Conditions Among Privately Insured Children and Adults. *Preventing Chronic Disease*. 20. E06. 10.5888/pcd20.220292.

Schumacher, A., Bethman, A. (2023). *Financial hardship during the COVID-19 pandemic*. In: *Social, health, and economic impacts of the COVID-19 pandemic and the epidemiological control measures. First results from SHARE Corona Waves 1 and 2*, A. Börsch-Supan, A. Abramowska-Kmon, K. Andersen-Ranberg, A. Brugiavini, A. Chłoń-Domińczak, F. Jusot, A. Laferrère, H. Litwin, Š. Smolić, G. Weber (Eds.). De Gruyter: Berlin/Boston, 231-242. 10.1515/9783111135908.

Shim, S., Xiao, J. J., Barber, B. L., Lyons, A. C. (2009). Pathways to life success: A conceptual model of financial well-being for young adults. *Journal of Applied Developmental Psychology*. 30(6). 708-723. 10.1016/j.appdev.2009.02.003.

Stolz, E., Mayerl, H., Waxenegger, A., Rásky, É., Freidl, W. (2016). Impact of socioeconomic position on frailty trajectories in 10 European countries: evidence from the Survey of Health, Ageing and Retirement in Europe (2004–2013). *Journal of Epidemiology and Community Health*. 71(1). 10.1136/jech-2016-207712.

Stuck, S., Zuber, S., Kotte, M., Franzese, F., Gruber, S., Birkenbach, T., Pflüger, S.-M. et al. (2024). *Release Guide 9.0.0. Survey of Health, Ageing and Retirement in Europe*. Available at: https://share-eric.eu/fileadmin/user_upload/Release_Guides/SHARE_release_guide_7-0-0.pdf.

Sun, L., Small, G., Huang, Y.-H., Ger, T.-B. (2022). Financial Shocks, Financial Stress and Financial Resilience of Australian Households during COVID-19. *Sustainability*. 14(7). 3736. 10.3390/su14073736.

Wang, S., Kamerāde, D., Bessa, I., Burchell, B., Gifford, J., Green, M., Rubery, J. (2022). The impact of reduced working hours and furlough policies on workers' mental health at the onset of COVID-19 pandemic: a longitudinal study. *Journal of Social Policy*, 1-25. 10.1017/S0047279422000599.

Wang, Y., Yang, W. (2022). Does Receiving Informal Care Lead to Better Health Outcomes? Evidence From China Longitudinal Healthy Longevity Survey. *Research on Aging*. 44(7-8). 510-518. 10.1177/01640275211052834.

Weinstock, L. (2021). *COVID-19: Employment Across Industries*. Congressional Research Service Report. Available at: https://crsreports.congress.gov/product/pdf/IN/IN11564.

Xiao, J. J., Ahn, S. Y., Serido, J., Shim, S. (2014). Earlier financial literacy and later financial behaviour of college students. *International Journal of Consumer Studies*. 38(6). 593-601. 10.1111/ijcs.12122.