





Less is more? Why do we find less severe mental and material impact of COVID-19 among the most marginalised and homeless in countries with lower welfare spending?

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Abstract

The study examines how various policy approaches in countries may have influenced the material and mental well-being outcomes of the COVID-19 pandemic among marginalised groups and people experiencing homelessness in Europe. In a structured country comparison case study approach, we combine country-based indicators, e.g., the level of infection, unemployment, and restrictions, with individual data from a cross-sectional survey with 226 participants from 6 European countries. Contrary to expectations, our results suggest that vulnerable people living in countries with low welfare expenditure report lower negative mental and material impact of the COVID-19 pandemic than people living in countries with high welfare expenditure countries. This unexpected result could be explained by higher expectations of the level of support they should have received during extraordinary times such as the pandemic among respondents in the studied high welfare expenditure countries. Due to our cross-sectional design across only six countries, we cannot generalise the trend to Europe and only speculate on the causal mechanisms behind the observed association. We also discuss factors like the accessibility of care organisations' support and pre-existing welfare policies. We suggest possible additional factors that may shed light on our results, noting that these issues need to be examined further in future studies with a more extensive study sample.

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1. Introduction

The COVID-19 pandemic brought to daylight the existing structural inequalities and disadvantages that pave the way for the poor adaptation of societies to extreme events [1,2]. Research into how social policies and labour market regulation have been reshaped to limit the negative consequences of the pandemic has demonstrated governments' efforts in terms of unemployment and income maintenance [3; Vaalavuo, 2021). However, the crisis has rarely prompted the extension of equality measures to new populations and minority groups despite, in many cases, their heightened vulnerability to the virus and its mitigation measures [4]. For example, remote and displaced individuals and communities (i.e., homeless people and migrants) rarely access government assistance programmes [5]. Experiences of the pandemic have triggered the need for re-assessing the effective implementation of the Sendai Framework for Disaster Risk Reduction in terms of national structures for mitigating disproportionate harm to these individuals and groups that are already in vulnerable situations [6,7]. In this article,

we focus on the abilities of the national welfare systems to buffer the impacts of the COVID-19 pandemic (and the related restrictions), concentrating on the experiences of the most marginalised and materially deprived in Europe.

In the COVID-19 pandemic, the susceptibility to getting infected and being severely harmed by the virus has put in the spotlight the elderly, individuals with health conditions, and key workers (e.g. Refs. [[8], [9], [10]]). However, individuals with socioeconomic disadvantages, like people experiencing homelessness and people living in material deprivation, also belong to the high-risk group the coronavirus impacts [11,12]. The outcomes of the COVID-19 pandemic and the related socio-economic and mental stresses have been studied in relation to individual resilience factors, including social capital [13], social and health status (Siimsen et al., 2023 and Olson et al., 2023 in this issue). However, the varying outcomes of the COVID-19 pandemic on the people experiencing homelessness and the marginalised individuals across various welfare systems and crisis response strategies in European countries have remained understudied.

In this paper, we focus on the COVID-19 experiences of the most marginalised in six European countries, and the aims of the paper are twofold.

- a) Explore if and how the material and mental health outcomes of the COVID-19 pandemic among these individuals differed across the studied countries;
- b) Identify how factors like national COVID-19 infection levels, COVID-19 restrictions and national welfare systems' responses influenced the material and mental health outcomes for these individuals.

The study examines the outcomes among a segment of homeless and socio-economically most marginalised individuals - the clients of care organisations, including soup kitchens, day centres, temporary shelters, and residential facilities. We study this in three countries that can be labelled high welfare expenditure (HWE) countries (Norway, Belgium, Portugal) and three countries that can be labelled low welfare expenditure (LWE) countries (Estonia, Czech Republic, Hungary).

Europeans stand widely divided in their views on the foundations of the nationally bounded welfare state (Baute et al., 2018, [14,15]). In the Northern, followed by Southern European HWE countries, there appears to be considerable satisfaction with the welfare state's performance. In Eastern European LWE countries, dissatisfaction with current provisions is more widespread, and new proposals are being sought to extend the government responsibility and to improve the living conditions of those in vulnerable situations (e.g. pensioners, young people) (Baute et al., 2018, [14,15]). Based on the above and the welfare states variable investments devoted to social protection and redistribution [16], we hypothesise that the safety nets for socially marginalised people were better in the HWE countries. Thus, they were protected from experiencing severe mental and material impacts during the COVID-19 pandemic.

2. Theoretical overview and previous research

Disasters do not affect all individuals evenly, and extreme situations take a higher toll among some segments of society due to the intersecting conditions influencing their vulnerability [17]; Wisner et al., 2016). Vulnerability is the susceptibility to experiencing harm to mental or physical health and material well-being manifests as the situational inability of individuals, groups or societies to employ adequate resources to anticipate and cope with risks [18]. The use of the intersectional perspective has been advised as an analytical tool to uncover the interplay of several individual, socio-structural and situational factors cumulating in specific individuals or societies under certain conditions [[19], [20], [21]]. Notably, the social order of society, including dominant considerations and institutionalised (in)justices and (in)equality, are rarely recognised foundations of the cultural-historical context where vulnerabilities emerge [22]. Very little research currently exists looking at both the individual, social and institutional mechanisms of vulnerability among populations with various degrees of exclusion and marginalisation (notable exceptions include [23], and cross-country comparisons are called to explore these patterns (Codagnone et al., 2020; Geirdal et al., 2021; Gloster et al., 2020).

2.1. Material and mental outcomes

During the pandemic, marginalised social groups like people with disabilities, migrant workers, refugees, and different minorities faced challenges characteristic of their current circumstances [24]. Among the factors determining their vulnerability in the pandemic, the living arrangements of socially marginalised people were the key factors [13]. Compared to the more marginalised individuals living on the street and leading more transient lives, the people living in their own homes may have better opportunities to protect themselves from infection [25]; Tsai & Wilson 2020).

As for sociodemographic differences, women have faced more economic challenges, including loss of work (Flor et al., 2022 [26]); and the elderly have experienced adverse outcomes since the poverty rates and reliance on social benefits are typically relatively high in this population (Li & Mutchler, 2020). Further contributing to the adverse effects, the populations with low socio-economic status or racial and ethnic minorities have a disproportionate burden of chronic diseases, COVID-19 infection, hospitalisation, and mortality rates (Hacker et al., 2021). Low economic status households are more likely to struggle to cope with the COVID-19 pandemic [27], as they are more likely to have temporary and precarious job contracts, which are more likely to be terminated by the economic downturn during the crisis.

Particularly, migrants in precarious employment, with lower socioeconomic status, older age, and less than five years of stay in the country of residence have faced difficulties during the COVID-19 pandemic [28], including feeling further stigmatised and alienated (Arora et al., 2022). However, they tend to be content with the institutional support they received during the crisis, attributed to “the frame of reference”, as immigrants tend to come from countries with poorer institutional performance (Arora et al., 2022). Compared to national residents, migrants or asylum-seekers have more often experienced symptoms of depression linked to recent unemployment and food insecurity [29,30].

People with chronic health conditions among poor and marginalised populations have faced difficulties in accessing healthcare and severe social and financial consequences from the pandemic (Singh et al., 2021). In addition to physical health, psychological well-being determines people's ability to cope with stress ([31]; Robinson et al., 2022). Psychological resilience is a significant protective factor against depression and general health after natural disasters (Kukihara et al., 2014; Cohen et al., 2016; Gloster et al., 2020).

Previous hazard experiences are considered a factor that exacerbates the negative experiences of a disaster [32]. Aspects of the COVID-19 pandemic, including the food shortages and lockdowns, triggered memories of previous hazard exposure among the marginalised groups and amplified adverse mental health outcomes during COVID-19 [33,34].

Systemic features in hazardous events have been increasingly highlighted to amplify the negative impacts of disasters [35,36]; Fekete & Rufat in this issue). Elements are specific to disaster situations, and everyday life arrangements can be distinguished among these structural determinants. During the pandemic, the vulnerability in some of the marginalised social groups increased because restrictive measures or non-eligibility for some support measures often overlapped [24].

Cross-country comparative analysis of policy measures in response to COVID-19 is emerging (c.f [4,37]. For example, Europeans' views on the policy measures to overcome the effects of the pandemic show a divide between North and West European countries (e.g. Portugal 57%; Germany 53%; Sweden 52%) where more people assessed that health benefits are more significant than the economic damage, and Eastern European countries whereby large, people think that economic damage is greater than the health benefits (e.g. Hungary 59%, Slovenia 58%, Poland 58%) (European Parliament, 2020). The overviews of the policy impacts on the generally understudied marginalised groups are non-existent.

2.2. Pre-existing welfare policies' impact on crises coping

The social welfare status (e.g. the level of unemployment, welfare expenditure) will influence national systems' abilities to support those in need and assist people in redistributing resources over the life cycle. The cluster of Eastern European countries is characterised by a welfare state that is less generous and less well-funded but also has a high degree of universalism compared to mature welfare states, e.g., in Western and Northern Europe (EPRS, 2022; Kuitto, 2016).

The social democratic universalist (Northern European, but increasingly also Belgium and Netherlands) and conservative corporatist (Germany) approaches are characterised by high social protection. Southern countries with moderate social protection, the liberal welfare (United Kingdom) style, and the Central and Eastern European states offer weak social protection (EPRS, 2022).

However, these geographic divisions should be handled carefully, as divergence also appears among these countries. For example, whereas the Southern European welfare regime presents several inefficiencies that make social policies much less successful in tackling poverty, the case of Portugal is further developed and contrasted with other countries in Southern Europe (Canale et al., 2019; Perez & Matsaganis, 2018).

In this paper, we will look at the three high welfare expenditure (HWE) countries that represent moderate to high levels of social protection (Portugal, Belgium and Norway) and three low welfare expenditure (LWE) countries with low social protection (Czechia, Hungary and Estonia).

2.3. Policy-responses to the pandemic

High levels of COVID-19 are generally accompanied by lockdowns and restrictions on activities, entailing higher numbers of unemployed people and rates of poverty [38,39]. The European welfare regimes performed somewhat similarly in HWE countries in Northern and Western Europe. However, people in liberal states tended to suffer more significant economic losses and economic inequality (Bejan & Nikolova, 2022); [40]. The crisis has not prompted governments to extend equality measures to new populations and minority groups despite, in many cases, their heightened vulnerability to the virus [4]. The failure to take complete account of the needs and interests of the most vulnerable and exposed sections of society has been due to the persistence of institutional legacies (e.g. in Germany and Sweden) or, in some cases, the chaotic, ad hoc nature of the Covid responses as a consequence of the country's liberal legacy (e.g. in the UK) [4]. The crisis has strengthened the critical characteristics of the Nordic welfare states by the state taking on a substantial central role with universal and relatively generous benefits, such as for those who become unemployed or have reduced income because of the crisis [37]. We more specifically look into the measures to prevent the spread of the virus and the measures to support societal adaptation.

In order to overcome the adverse effects of the pandemic and the related restrictions, support measures were implemented in most European countries [41,42]. In many countries, unemployment benefits and welfare payments were expanded, and the eligibility criteria were relaxed to

support those who had fallen into vulnerable situation [42].

In conclusion, we can infer that the mental and material impacts of marginalised people are likely to be influenced by a range of factors at the national level, ranging from the level of infection to the stringency in the national measures to counter the infection level (e.g. close down of social and economic activities) to the pre-existing welfare policies, and support to marginalised people during the pandemic to alleviate socioeconomic and mental impacts. We infer that the safety nets for socially marginalised people were more potent in the HWE countries during the COVID-19 pandemic. Thus, these individuals experienced less severe mental and material impacts.

3. Materials and methods

To define the impacts of the national welfare context and pandemic-time policy responses on the material and mental outcomes of the pandemic for marginalised individuals, we merged the data from a quantitative survey among the most marginalised in Europe with data on welfare policy measures in the studied countries.

We looked into six European democratic countries with relatively stable economies that exhibit different social protection styles. The countries were selected as participating in the EU Horizon 2020 BuildERS project, where a survey among the marginalised populations could be carried out. The countries can be roughly categorised into HWE and LWE countries, and we will refer to them like this throughout the text. See [Table 3](#) for a summary of the policy differences between countries relevant to our research.

3.1. Quantitative survey

3.1.1. Recruitment of respondents

Respondents were mainly recruited in the second half of 2020 and the first half of 2021 and were asked to rate their experiences with COVID-19 since March 2020. The Norwegian Centre for Research Data approved the current study, and similar institutions or research ethics committees in all the other countries participating in the study. In order to get access to the marginalised groups and homeless, the studied groups are clients of the Salvation Army or similar social care organisations, using services ranging from soup kitchens to homeless shelters and care facilities where people live for extended periods. Thus, the respondents to the face-to-face interviews included a range from people living in their own homes to people living on the street. The interviewers were given training focusing on ethics (e.g. recruitment and ways to avoid harming respondents in any way and to prevent exploitation of social hierarchies or dependencies inside the organisation) and practical survey issues by the BuildERS partner IZEW (International Centre for Ethics in the Sciences and Humanities, at the University of Tübingen in Germany) and the Salvation Army in Brussels.

3.1.2. Survey themes

The following survey themes and their operationalisation were outlined by Orru et al. [43].

Background variables

The survey includes questions about sex, age, residence status (national citizen, asylum seeker, residing in the country without documentation, etc.), and whether respondents perceive that they represent a minority.

Living arrangements

In classifying living and sleeping arrangements, we use the Framework for Understanding Homelessness on a Global Scale [44]. We ask respondents: “Where have you been living and sleeping most of the time over the past year?” and divide the answers into three alternatives: 1) My own home, 2) Centre/facility, 3) Street temporary arrangement. We also ask respondents about years living without a home and as a care service client (e.g. Salvation Army). The level of protection provided by living arrangements is the primary source of vulnerability we use in the study.

Exposure to COVID-19

We asked respondents whether they had been infected, whether friends had been infected, and whether they had lost someone close to COVID-19.

Psychological and physiological health

We apply Nikoo et al.’s [45] enumeration of the frequent physical and mental illnesses among individuals in precarious material situations. In the survey, we asked: “Have you ever been told by a doctor that you have any of the following conditions?” We provided 15 different answer alternatives for the respondents, comprised of different physiological and psychological diagnoses. We made two variables of these. The

variable “physiological diagnoses” concerns heart and lung conditions (i.e. risk group for COVID-19), while the variable “psychological diagnoses” include schizophrenia, depression and personality disorder.

Individual psychological resilience

The survey includes five questions about individual resilience: “Please assess how often the following statements are true in your case. Provide answers that generally apply for the last year”: I can adapt to change, I tend to bounce back after illness or hardship, I can stay focused under pressure, I think of myself as a strong person, I can handle unpleasant feelings. Answer alternatives ranged from: “Not at all” (=1) to “Nearly all the time” (=5). We made a sum scale index based on the questions (min: 5, Max: 25).

Experience with other disasters

The survey includes 16 questions about experiences with previous man-made and natural disasters: “In the last ten years, have you experienced any of the following natural or man-made hazards?” (e.g. extreme heat, earthquake, wildfire, terrorist attack, war). We also asked respondents to rate the physiological and mental strain they experienced due to the disasters.

Psychological and material impact

We measure psychological impact using the statement: “The pandemic has had a negative impact on my physical or mental well-being.” The question we use to measure the material impacts of the pandemic is: “The pandemic has had a negative effect on my income, access to shelter, food.”

3.1.3. Analysis

We use one-way ANOVA tests when comparing the mean scores of different groups. We use Chi-squared tests to compare frequency distributions between groups. The lowest cell count in our Chi-squared tests is 35. We use linear regression analyses, where independent variables are included in successive steps to assess the conditions explaining variation in the respondents' answers to the two variables measuring psychological and economic impacts. The independent variables are included based on previous research indicating key independent variables influencing the dependent variables and bivariate correlation analyses, where we identify significant relationships and include independent variables based on that. The most basic independent variables (i.e. the demographic) are included first, e.g. age, sex, and living arrangements. Then, the other independent variables are included.

A multilevel mixed-effects linear regression (also known as a hierarchical linear model) with the country as a level 2 identifier and the individual as a level 1 identifier was employed to investigate the impact of country-level variables on self-reported financial and mental well-being. As we only have six countries in our dataset, we ran the model with a Restricted Maximum Likelihood estimation with a Kenward-Roger correction (as suggested by Ref. [46]). Additionally, we limited the number of variables at the individual level to four and the country level to one and ran the model once for each variable. Although this makes our findings somewhat susceptible to type 2 errors, we believe it necessary to include the country-level variables and make statements inferred from our statistical analysis. Our findings regarding country-level variables should be taken as exploratory. All variables used in the multivariable analysis were scanned for outliers by marking values with an interquartile ratio larger than 1.5. Marked values were visually inspected using histograms. All marked values were judged not to be outliers. Finally, given the relatively small sample and the explorative nature of our study, we think it is reasonable not to use a strict 5% significance level in our statistical analyses. Therefore, the analyses report 5% and 10% significance levels. This applies both in our bivariate and multivariate analyses.

3.2. Pre-existing welfare context and pandemic response measures

To explore the extent to which the national contexts may have influenced the well-being outcomes for the surveyed individuals, the research presents statistics and indicators on the infection rate per 100000 inhabitants (European Centre for Disease Prevention and Control [ECDC], 2020), and national unemployment rate [47], as well as government expenditure on social protection [48].

The infection rate per 100000 inhabitants was calculated based on the monthly average number of cases reported in each country by the ECDC between May and December 2020 and the countries' total population in 2019 [49] (the rate is not antigen test-based).

The national unemployment rate was compiled monthly by the statistical office of the European Union (Eurostat). The rate is the number of people unemployed as a percentage of the labour force or active population [47]. As for the unemployment support measures, the unemployment benefits in Estonia, Hungary and the Czech Republic lasted up to 3 months. In Belgium, Norway and Portugal, the duration was higher, from four and up to six months [50,51].

Government expenditure on social protection is measured by the general government social protection expenditure rate to gross domestic product (GDP). This rate includes expenditures in groups like old age, survivors, sickness and disability, family and children, unemployment, housing, social exclusion, and R&D social protection [48].

The Government response stringency index [52] between May and December 2020 captures the government response to the pandemic to curtail the spread of the virus, which may have repercussions on the material well-being of the most marginalised and homeless. This index comprises nine metrics: public information campaigns, international travel controls, restrictions on public gatherings, cancellation of public events, workplace closures, school closures, public transport closures, restrictions on internal movement, and stay-at-home requirements. Its values range from 0 to 100. Higher values represent strictest governmental response to the pandemic [[53], [54], [55]].

4. Results

4.1. Results from the quantitative survey

Table 1 shows respondents' answers regarding their living arrangements over the past year.

Table 1. Respondents' answers to the question: "Where have you been living and sleeping most of the time over the past year?" distributed over four living arrangement categories, according to country, including the share of female respondents in each country.

	Home	Facility/Centre	Street and temporary	Other	Total	Share of females
Estonia	15%	43%	36%	7%	61	25%
Hungary	0%	0%	100%	0%	32	48%
Czech Rep.	0%	5%	86%	8%	37	27%
Total LWE	7%	22%	66%	5%	130	32%
Norway	57%	14%	29%	0%	28	43%
Portugal	40%	6%	48%	6%	52	19%
Belgium	38%	0%	62%	0%	26	23%
Total HWE	44%	7%	46%	3%	106	27%

The duration of stays in the centre/facility may also be temporary, indicating that the main line of demarcation is between people living in their own homes and the two other groups, which we may refer to as different types and degrees of homelessness. Thus, although the distribution of living arrangements differs among countries, with six times more respondents living in their homes in the HWE countries, people living on the street make up considerable shares in all the studied countries.

The time living without one's own home and the time as a social care organisation client differs across LWE and HWE countries. Respondents in LWE countries have lived longer without their homes: on average, 3.6 years in facilities and 6.9 years on the streets (a full 6.2 years on average without a home). In HWE, individuals have lived on average 10.6 years in facilities and 2.7 years on the streets (a total average of 3.6 years without a home).

Table 2 indicates the generally older respondents in the sample from the LWE countries, which has 23% points more respondents who are 50 years or older.

Table 2. Respondents' age distribution in six categories.

	18–29	30–39	40–49	50–59	60–69	70 or above
LWE	3%	9%	21%	34%	28%	5%
HWE	8%	21%	28%	25%	14%	5%
Total	5%	14%	24%	30%	21%	5%

Table 3. Case study countries' government expenditure on social protection before COVID-19 (in 2019), expenditure on social protection during the survey period, unemployment rate, infection rate per 100000, and stringency index in the study period, May–December 2020.

	Estonia	Czech Republic	Hungary	LWE	Norway	Belgium	Portugal	HWE
Social protection expenditure rate before COVID-19 (% GDP in 2019)	13.1	12.5	12.7	12.8	19.7	19.3	16.9	18.6
Social protection expenditure rate during the survey period (% GDP in 2020)	15	14.4	13.6	14.3	22.3	22.7	18.8	21.3

	Estonia	Czech Republic	Hungary	LWE	Norway	Belgium	Portugal	HWE
Unemployment rate	7.6	2.9	4.4	5.0	5	6.1	7.4	6.2
Infection rate per 100000	154.6	673.1	359.6	395.8	75.9	608.3	394.2	359.5
COVID-19 Response Stringency Index	40.5	49.1	56.9	48.8	45.7	58.9	63.6	56.1
Spending on averting social exclusion as a percentage of GDP	0.2	0.4	0.8	0.47	0.9	1.2	0.4	0.83
Share of the population in severe material deprivation	3.3	2.7	8.0	4.7	2.0	4.3	5.6	4.0

As for the respondents' residence status, 8% of the LWE respondents were immigrants/asylum-seekers/without documentation, while the corresponding share for respondents recruited in HWE was 38%. This is probably related to a higher level of immigration in the studied HWE European sample. In the LWE sample, 13% considered themselves a minority (e.g. cultural, ethnic, health/disability-related, sexual orientation), while the corresponding share for respondents recruited in HWE was 22%. The psychological disease had been diagnosed among 23% of LWE and 18% of HWE respondents. Concerning physiological diagnoses, 48% of the LWE and 15% of HWE respondents claimed a diagnosis. The latter result is possibly due to the age difference between the two respondent groups.

Regarding exposure to COVID-19, 6% of the LWE respondents reported that they had been infected themselves, compared to 9% of the HWE respondents. Respondents in the LWE sample reported that 0.5 acquaintances had been infected with COVID-19, compared to 5.5 acquaintances among respondents in the HWE sample.

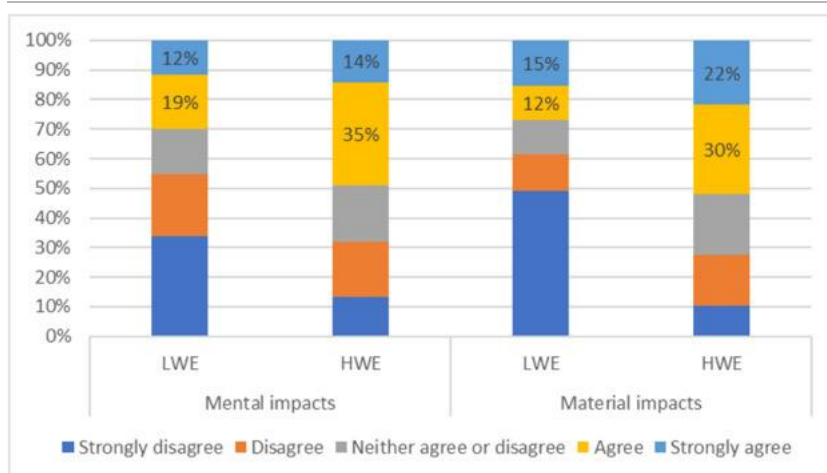
4.2. Pre-existing welfare context and responses to the pandemic

The social expenditure rate in GDP per capita can set a baseline differentiating the countries and residents. For example, the GDP per capita in Norway and Belgium is almost 4 and 2 times higher than in the Czech Republic, the highest GDP per capita among the studied LWE countries [48]. Expenditure on social protection was the most significant area of general government expenditure in 2020 in all reporting countries (e.g., EU Member States and EFTA countries). See Table 3.

Comparing the three LWE countries with the HWE countries, we see a higher social protection expenditure rate, both before and during the pandemic, and spending on averting social exclusion, a slightly higher unemployment rate in the HWE countries, a somewhat higher score in the COVID-19 response Stringency Index in the HWE, and slightly higher infection rates in the LWE countries.

4.3. Psychological and material impacts on socially marginalised groups

Respondents agreed about the pandemic's negative psychological (mental well-being) and material (income, access to shelter, food) impacts. Fig. 1 indicates higher shares agreeing on the statement about mental impacts in the HWE sample (19 percentage points more). A Chi-square test indicates that differences are statistically significant at the 1% level ($p=0.002$).



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Fig. 1. Distributions of answers to the statement: “The pandemic has had a negative effect on my mental well-being” and “The pandemic has had a negative effect on my income, access to shelter, and food.” Among respondents from HWE (N=106) and LWE (N=130).

We also see higher shares agreeing on the statement about material impacts in the HWE sample (25% points more). A Chi-square test indicates that differences are statistically significant at the 1% level ($p=0.001$). In section 4.1, we saw that the distribution of living arrangements was somewhat different in the two samples, indicating six times more people living in their homes in the HWE sample. We therefore also compare shares agreeing only for people living on the street or under temporary arrangements. Comparing shares agreeing only for people living on the street or under temporary arrangements, we see that 23% points more ($p<0.001$) agree in the HWE sample on the question measuring mental impacts and 15% points more ($p<0.001$) agree in the HWE sample on the question measuring material impacts.

4.4. Multivariate analyses

We conducted multivariate analyses to examine factors influencing the psychological and material impacts of the COVID-19 pandemic for socially marginalised groups. The highest correlation between model variables is 0.25, suggesting no problems with multicollinearity. In Table 4, we present linear regression analyses examining factors influencing the self-reported adverse effects on mental well-being or mental health.

Table 4. Linear regression. Dependent variable: “The pandemic has had a negative effect on my mental wellbeing, or my mental health.” Standardised beta coefficients.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Gender	-.153**	-.151**	-.144**	-.133*	-.148**	-.098*	-.064	-.071
Age		-.124*	-.137**	-.139**	-.113*	-.146**	-.134**	-.092
Self-assessed health			-.155**	-.159**	-.093	-.107*	-.081	-.072
Living on the street (No=1, Yes=2)				-.055	-.116*	-.050	-.076	-.042
Resilience scale (3 items)					-.264***	-.159**	-.128**	-.108*
Worry about COVID-19 infection.						.452***	.450***	.426***
Psychological disease							.190***	.180***
Negative impact on income, etc.								.179***
Adjusted R ²	.019	.030	.050	.048	.105	.296	.326	.351

* $p<0.1$, ** $p<0.05$, *** $p<0.01$.

To investigate the impact of country-level variables, we tested these variables one by one in a multi-level model (Table 5).

Table 5. Multi-level regression with Restricted Maximum Likelihood estimation and Kenward–Roger correction. Dependent variable: “The pandemic has had a negative effect on my mental wellbeing, or my mental health.”

Variable	Model 9.1	Model 9.2	Model 9.3	Model 9.4	Model 9.5	Model 9.6	Model 9.7
Health	-.11*	-.11*	-.11*	-.11	-.10	-.11*	-.11*
Worry about Covid-19 infection	.43***	.43***	.42***	.42***	.42***	.42***	.42***
Psychological disease	.57***	.57***	.54***	.54***	.51***	.54***	.54***
Negative impact on income, etc.	.14**	.14**	.15***	.15***	.16***	.15***	.15***
Country variable coefficient	.08**	.07**	.06	.00	.03*	.33	.01
Country variable name	Pre-COVID social spending	Peri-COVID social spending	Unemployment rate	Infection rate	Stringency index	% GDP on averting marginalisation	% population materially deprived
Constant	-1.51	-1.41	-0.55	-0.34	-1.6	-0.41	-0.25
R ²	.37***	.37***	.34***	.34***	.38***	.34***	.33***

* $p<0.1$, ** $p<0.05$, *** $p<0.01$.

First, women feel more negatively affected by mental health issues during the pandemic and worry more often about potential infections. Gender's effect size is reduced considerably in Model 6 when worry about infection is included. This results in a gender-sensitive correlation between worrying about the infection and the perceived mental health status. The actual causality for both worries and mental health is beyond the scope of these numbers.

Second, age is significantly and negatively related to negative mental impacts, indicating that these are more severe among younger respondents. The age variable ceases to contribute significantly in Model 8 when negative COVID-19 impact on income etc., is introduced. This indicates that the relationship between age and negative mental impact is related to negative material impacts.

Third, self-assessed health is significantly and negatively related to negative mental impacts, indicating that respondents who assess their physical health to be good experience less severe negative mental impacts when worry about infection is considered. When psychological health is included, the health variable ceases to contribute significantly in Model 7, indicating the relationship between the two variables.

Fourth, respondents who score higher on the individual resilience scale report fewer negative impacts on their well-being and mental health. The contribution of this variable is reduced considerably when a negative impact on income etc., is included in Model 8.

Sixth, worry about infection contributes significantly in all the models, indicating that, to a great extent, respondents' negative mental impacts of COVID are related to worry about infection.

Seventh, psychological disease contributes positively and significantly. This indicates that people diagnosed with personality disorder, schizophrenia, or depression report a higher negative impact on their well-being and mental health.

Eighth, negative COVID-19 impact on income is related to higher negative impacts on respondents' well-being and mental health. Ninth, it is exciting to note that higher social spending, both prior to and during the pandemic, is associated with a more negative influence of the COVID-19 pandemic on self-reported mental well-being or mental health.

Finally, the stringency index is positively associated with a higher negative impact on mental well-being. A 1-point increase in the stringency index (1–100) is associated with a mean change of 0.03 on the mental well-being impact scale (which ranges from 1 to 5). This makes sense, as more restrictive policy measures should have a larger impact on mental well-being.

The adjusted R2 value in Model 9 indicates that the variables in the model explain 38–39% of the variation in the dependent variable. We have examined the significance level of the F-changes in Models 1–8 in Table 3 to assess whether some of the variables added in the models significantly improved the predictions in each model. The following variables contributed to significant changes ($p < 0.01$) in the R-square: individual resilience (Model 5), worry about COVID-19 infection (Model 6), psychological disease (Model 7), negative economic impact (Model 8), policy measures (Model 9.1 and 9.2). The following variables contributed to significant changes ($p < 0.05$) in the R-square: sex (Model 1) and self-assessed health (Model 3). Thus, these variables contributing to significant R square changes are the most important predictors in the models in Table 3.

Table 6 presents linear regression analyses examining factors influencing the pandemic's material impacts (see Table 7).

Table 6. Linear regression. Dependent variable: "The pandemic has had a negative effect on my income, access to shelter, food etc." Standardised beta coefficients.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gender	-.038	-.027	-.001	-.004	-.014	-.013
Age		-.241**	-.245***	-.232***	-.224***	-.225***
Living on the street or in temporary housing (=2)			-.132*	-.164**	-.132*	-.142**
Individual resilience scale				-.139**	-.122*	-.139**
Immigrant/Asylum seeker (=2)					.143**	.158**
Paid work main income (=2)						.108
Adjusted R2	-.003	.050	.063	.077	.092	.099

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7. Multi-level regression with Restricted Maximum Likelihood estimation and Kenward–Roger correction. Dependent variable: "The pandemic has had a negative effect on my income, access to shelter, food etc."

Variable	Model 7.1	Model 7.2	Model 7.3	Model 7.4	Model 7.5	Model 7.6	Model 7.7
Age	-.25***	-.25**	-.26**	-.27***	-.26**	-.26**	-.27**
Living on the street	.11	.13	.18	.18	.21	.20	.20
Immigrant/asylum seeker	.21	.24	.35	.33	.44	.32	.38
Paid work is the main income	.27	.25	.17	.17	.17	.17	.16
Country variable coefficient	.15**	.11*	.06	.00	.03	.86	.05
Country variable name	Pre-COVID social spending	Peri- COVID social spending	Unemployment rate	Infection rate	Stringency index	% GDP spent on averting marginalisation	% population materially deprived
Constant	.30	.73	2.39	3.08	1.02	2.20	2.48
R2	.13***	.11**	.03**	.04**	.08**	.08**	.04**

*p<0.1, **p<0.05, ***p<0.01.

We employ multi-level modelling to investigate the effect of policy differences between countries.

First, age is significantly and negatively related to negative material impacts. This result is consistent in all the models. This means that respondents report decreasing negative economic impacts with increasing age when controlling for the other variables in the model.

Second, living conditions are negatively related to negative material impacts in Model 3–6, indicating that respondents living on the street report fewer negative material impacts than those living in their homes and facilities. When the policy variables are included, this variable ceases to contribute significantly to Model 7. This indicates that the influence of living arrangements on material impacts is related to policy. We also saw in section 4.1 that six times more people live in their homes in the HWE sample, and these respondents report more negative mental and material impacts. That is why we also compared impacts for people living on the street and temporary (controlling for this sample bias related to living arrangements).

Third, individual resilience is significantly and negatively related to reported negative material impacts, indicating that respondents who assess their psychological resilience more frequently report negative material impacts.

Fourth, immigrant/Asylum seeker is positively and significantly related to self-reported negative material impacts until policy measures are included in Model 7. This probably also reflects the sample bias in section 4.1.1: more immigrants and asylum seekers are in the HWE sample.

Fifth, having paid work as the main source of income contributes positively and significantly to reported negative economic impacts. Paid work refers to both formal and informal paid work. This indicates that this work has been lost for some respondents during the pandemic.

Finally, social spending on welfare before and during the COVID-19 pandemic statistically significantly influences material well-being. Again, the larger the share spent on welfare, the higher the negative impact is reported. We find no connection between infection rate, unemployment rate, stringency index, per cent of GDP spent on averting marginalisation, or the share of the population in severe material deprivation.

The adjusted R-square value in Model 7 indicates that some of the variables in the model explain 13% of the variation in the dependent variable. We have examined the significance level of the F-changes in Models 1–7 in Table 4 to assess whether some of the variables added in the models significantly improved the predictions in each model. The following variables contributed to significant changes ($p<0.01$) in the R-square: Age (Model 2) and social spending (Models 7.1 and 7.2). The following variables contributed to significant changes ($p<0.05$) in the R-square: Individual resilience (Model 4) and Immigrant (Model 5). Thus, these variables contributing to significant R square changes are the most important predictors in the models in Table 6.

5. Discussion

During the COVID-19 pandemic, European countries predominantly continued their pre-existing patterns of investments in social protection, e.g. more liberal approaches were retained in LWE countries, e.g. in Central and Eastern Europe and more universal support measures in HWE countries, e.g. in Northern and Western Europe [3,4,37]. In this paper, we explored how the various policy approaches are associated with the material and mental well-being outcomes of the COVID-19 pandemic among marginalised groups and people experiencing homelessness in selected European countries.

5.1. Material and mental outcomes of COVID-19

The first aim of the paper was to explore if and how the material and mental health outcomes of the COVID-19 pandemic among individuals differed across the studied countries. Our results indicate significantly higher shares reporting negative mental and material impacts in the HWE sample (19% points and 25% points more, respectively).

This finding contrasts with the studies of HWE countries in Western and Northern Europe, where respondents say they have not experienced adverse health, well-being or economic effects. In contrast, in LWE countries in Eastern and Southern Europe, most people say they have been affected by these stresses [56]. This may indicate the varying life worlds the interviewed most marginalised and homeless have endured compared to the rest of the populations in the studied countries. It also underlines the dynamic and situational nature of vulnerability to hazards and the significance of the socio-economic and historical-cultural context in shaping the (interpretation) of disaster experiences [[19], [20], [21], [22]] also among the most marginalised.

5.2. Factors that could shed light on worse impacts in the HWE sample compared to the LWE sample

The study's second aim was to identify how the COVID-19 restrictions and national welfare systems' responses influenced respondents' material and mental health outcomes. In the following, we will discuss factors that might explain why the HWE sample reports a worse impact. It is important to note that our sample is relatively small and that the differences we see are unexpected and challenging to interpret. Therefore, the factors we discuss below should be considered suggestions for issues that should be examined further in future studies.

5.2.1. Factors at the individual level

Our results indicate that the self-reported mental and material impacts of COVID-19 are influenced by factors both at the individual (age, gender, resilience, worry) and at the state level. The multivariate regression analyses indicate that age influences harmful material and mental impacts, while gender influences negative mental impacts. In line with this, previous research indicates that younger representatives of the most marginalised and homeless are less experienced in handling various life situations and in less secure employment or state benefit schemes (also seen in Flor et al., 2022 and [26] have endured a double burden from the material as well as psychological insecurity due to the pandemic. Additionally, immigrant status, physical health, psychological health, resilience and living arrangements were essential factors in our multivariate analyses. The study results also align with previous results indicating that migrants represented a group facing particular difficulties during the COVID-19 pandemic [28]; Olson et al., 2023). Our analysis also indicates that individual psychological disease and psychological resilience influence coping with psychological or material hardships during a crisis. This aligns with the research of Liu et al. [31] and Cohen et al. (2016). Furthermore, our study indicates that poor self-assessed health is related to adverse pandemic outcomes among the studied marginalised groups. Many of these factors influencing adverse outcomes, e.g. being younger, having an immigration background, or having a mental disease, are more prevalent in the HWE sample and may explain worse outcomes in these studied countries in the bivariate analyses. However, we controlled for these factors in the multivariate analyses, and they still contribute significantly to outcomes. Thus, sample biases related to these factors cannot explain our results.

As for the effect of living arrangements, existing studies indicate that the psychological impacts of disasters are more harmful to people living on the street, whereas people living in their own homes may have better opportunities to protect themselves from infection and the related adverse impacts on wellbeing [25]; Tsai & Wilson 2020). However, the analysis shows that the respondents living on the street report fewer negative material impacts than those living in their homes and facilities. This might hypothetically be related to the fact that people living on the street already lived in a transient and materially insecure state, which perhaps was not that strongly affected when it comes to losses of food, shelter and income provision during the pandemic, as compared to respondents living in their homes. Another alternative interpretation for people on the streets reporting less negative material impact might be that most restrictions assumed a permanent home (e.g., social isolation) and perhaps they did not apply to people living on the street to the same extent. This is an important issue for future research.

5.2.2. Pre-existing welfare policies and responses to the pandemic

We explored if varying national welfare spending levels among respondents could be associated with different levels of well-being, both mentally and economically. The welfare expenditures are considered a device to help people insure against social risks and assist people in redistributing resources over the life cycle (cf., [57,58]. Whereas the social democratic universalist (Nordic) and conservative corporatist (Western) approaches are characterised by a high level of social protection, Southern countries have a moderate level of social protection; while the Central and Eastern European states offer weak social protection (EPRS, 2022). Compared to the studied LWE countries, the studied HWE countries have historically more comprehensive welfare states, including higher levels of welfare expenditure (EPRS, 2022; [48]. The score for expenditure on social protection in the countries named HWE was, on average, 18.6, while it was 12.7 for the countries named LWE in this study [59]. As for the welfare expenditure during the crisis, comparing the three LWE countries with the studied HWE countries, we saw a higher social protection expenditure rate on average in the HWE countries in 2020. These social and economic safety nets set a baseline that differentiates the countries and their residents but contrasts with the worse reported material and mental impacts among respondents in the HWE countries.

One plausible explanation for worse reported impacts among respondents in the studied HWE countries could be related to their potentially higher expectations to the level of support that they should have received during extraordinary times such as the pandemic. We might assume that higher spending levels on welfare measures before and during the pandemic are related to higher expectations. In the general public, when compared to the Central and LWE countries, in the Northern and HWE, followed by Southern Europe, there appears to be considerable satisfaction with the existing social protection arrangements (Baute et al., 2018, [14,15]). However, such social ruptures as the pandemic may have prompted more demands on the social support systems for the marginalised and homeless in the countries classified as HWE in our analysis. This is, however, speculation, and more research is needed to examine these issues further. Ultimately, as our research is cross-sectional, we cannot establish any causal reason why the most marginalised in LWE countries report a lower impact of COVID-19 on material and mental well-being. Our research can only report correlations. Additionally, as our dataset only contains data from six countries, which is below the recommended number of groups for a multi-level analysis [60], all findings must be treated with some level of caution. The state's welfare expenditure may show the overall economic safety granted to population groups. However, it is only an indirect proxy of the spending that might reach the most marginalised and people experiencing homelessness.

Higher levels of infections are generally accompanied by more stringent measures that affect people's economic activity and emotional well-being [38,39]. Low infection rates may be also due to stringent containment measures. However, we did not observe any infection rate effect on our outcome measures. This might be because there is not a one-to-one relationship between infection levels and the level of stringent measures. Some countries might apply very stringent measures and have a low infection level.

We also explored if the worse material and mental health impacts in the studied HWE countries could be explained through more restrictive measures, as infection control accompanied by lockdowns and restriction of activities may entail higher numbers of unemployed people and rates of poverty [61,62]. Preventive measures particularly tend to affect vulnerable people more severely, e.g. their access to health services [63,64] and movement possibilities [65]. Our analysis using the COVID-19 response Stringency Index showed that the index varied between the countries, from 76.6 in Belgium to 51.9 in the Czech Republic in May 2020 [52]. Our multi-level analysis indicates that the stringency index has a statistically significant association with the pandemic impact on the self-reported mental well-being of respondents but not material well-being. The higher the stringency, the stronger the negative mental impact. Heavier restrictions might explain some of the more negative mental impacts among the respondents in the HWE countries under study. The possible association with the stringency index must be taken with a grain of salt, as the stringency index does not reflect how effective governmental policies were [54].

The supportive policy measures also have specific patterns considering the LWE-HWE division. On the one hand, the studied LWE countries created new employment-related measures which did not exist before the pandemic. On the other hand, HWE countries improved previous schemes [50]. The unemployment benefits in the three studied LWE countries lasted up to 3 months. In the HWE, the duration was higher, from four and up to six months. These increases in employment protection again contrast our findings about worse material and mental impacts in the HWE countries. This may indicate the problems with the accessibility of the employment support schemes to the HWE sample in our study. We can, however, not conclude about this. Thus, more research is needed to shed light on this.

It is hypothetically possible that the effects of the identified country differences in the mental and economic effects reflect the coping of the care organisations in these country contexts. Emerging evidence [66,67] shows that the care organisations in the studied LWE countries (e.g., Estonia and Lithuania) tended to rely more on state and municipal funding. By contrast, in the studied HWE countries, with a long tradition of non-governmental care organisations, private donations, yet more volatile and sensitive to the economic fluxes, dominated as an income. During the pandemic, the provisions of these organisations may have been more affected in the HWE countries, leaving their clients (respondents of the current study) with less support. We can, however, not conclude about this based on our study, and we note that the role of care organisations in buffering the shortcomings in welfare state provisions needs further investigations in future studies.

5.3. Methodological limitations

The analysis includes relatively few countries and is confined to a few cities from these countries, not directly comparable from one country to another. This is a problem for the multilevel analysis. The countries included are not a random draw of countries in the population (European countries). On the contrary, the countries were picked *because* they represented two approaches to the pandemic. Thus, the results of our analysis must be interpreted with some level of caution. That being said, had we picked countries randomly, we would have required a much larger country sample to reach the same findings. Labelling the countries as LWE or HWE and including this as a dummy variable would be an alternative. However, this would breach the assumption of regressions that data points are independent. Furthermore, we would not have been able to directly test country-level variables such as the unemployment rate. Ultimately, we argue that breaching some of the assumptions made by multi-level models is a better approach than any other data analysis method, including not using the data we have collected from six different countries. However, future studies should include more countries when comparing LWE vs. HWE countries, like in the present study, to provide more robust comparisons. Future research could also look more in-depth into the effect of specific support measures, e.g., different unemployment benefits, housing, and healthcare scheme amendments, on the varied mental and material well-being outcomes.

6. Conclusion

This paper focuses on the COVID-19 experiences of the most marginalised in six European countries. Based on statistics indicating that welfare states differ substantially in the size of the budgets devoted to social protection and redistribution, we hypothesised that the safety nets for socially marginalised people were better in countries with a higher welfare spending during the COVID-19 pandemic and thus that these experienced less severe mental and material impacts. Our results hinted, however, the opposite of this. Higher social spending, both before and during the pandemic, seems to be associated with a more negative influence of the COVID-19 pandemic on mental and material well-being. This unexpected result could be linked to respondents in the studied HWE countries having higher expectations of the level of support they should have received during extraordinary times such as the pandemic. This indicates the importance of baselines and expectations for peoples' experiences of the mental and material impacts of disasters. We also suggest additional factors that may shed light on our results, noting that these findings are based on an unrepresentative sample and that these issues need further examination in future studies. Among the more important results is a statistically significant relationship between negative COVID-19 impact on mental well-being and the level of stringency of national measures to curb COVID-19. This suggests the need to take extra care in weighing the physical and mental health benefits and costs of infection control measures. Our results indicate that the availability and accessibility of disaster risk reduction and social policy measures for different groups of socially marginalised and homeless need careful consideration in further disaster research and policy development.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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Data availability



The authors do not have permission to share data.

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