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Healthcare Workers and Life Satisfaction during the Pandemic

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ABSTRACT

Healthcare Workers and Life Satisfaction during the Pandemic*

We evaluate the effect of the COVID-19 pandemic on the life satisfaction of healthcare workers, as compared to the wider workforce, in five European countries. In ten waves of quarterly panel data, the life satisfaction of healthcare workers is always higher than that of other essential workers and non-essential workers. Life satisfaction follows a double humped pattern over time for all workers, which is largely explained by the COVID-19 death rate and policy stringency. The spread of the pandemic in terms of the death rate has twice as large an effect on healthcare workers' life satisfaction; on the contrary, the latter are the only workers whose satisfaction was not affected by the stringency of lockdown policies.

JEL Classification: H51, I18, I31

Keywords: healthcare workers, life satisfaction, COVID-19, policy stringency

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1. Introduction

Healthcare workers are the backbone of healthcare systems, delivering care in often labour-intensive and high-pressure environments. In developed countries, the well-being of healthcare workers is pivotal in that it affects employee retention (Shields & Ward, 2001) and the quality of healthcare services. Doctors and nurses, in particular, are susceptible to stressful experiences at work due to the demanding nature of their jobs, with both increasing healthcare demand (partly due to population aging) and strains on resources from austerity measures and hospital-budget cuts (Mihailescu & Neiterman, 2019; de Belvis *et al.*, 2012; Rachiotis *et al.*, 2014). The COVID-19 pandemic exacerbated this stress and increased the turnover of healthcare workers, with subsequent effects on the quality and quantity of healthcare services (Moscelli *et al.*, 2022). The well-being of the healthcare workforce is therefore a critical public policy priority (Rehder *et al.*, 2021).

Given this priority, we here use quarterly panel data covering five European countries from April 2020 to November 2022 to address the two following research questions: 1) How did the life satisfaction of healthcare workers evolve during the pandemic, as compared to that of both other essential workers and the rest of the workforce? 2) Do these different life satisfaction profiles partly reflect differential effects of the spread of the pandemic and pandemic policies on worker well-being?

We find that healthcare workers were more satisfied with their lives than other workers during the pandemic period. This is not, however, a pandemic-specific result, as the same satisfaction gap appears in survey data that pre-dates COVID-19. This finding does not seem to reflect any self-selection of happier workers into the healthcare sector: as such, healthcare work seems to yield

intrinsic value and fulfilment, perhaps partly via societal recognition and job prestige (Hughes *et al.*, 2022).

Essential workers were required to continue working throughout the pandemic, reflecting their role in ensuring a functioning society. In contrast, non-essential workers often had to adhere to stay-at-home orders as their jobs were either not considered to be critical during the COVID-19 emergency or could be carried out from home. Essential workers thus ran a greater risk of infection but at the same time played a central role in community functioning during the public-health crisis. Given the wide variety of occupations that were classified as essential, ranging from high- to low-skilled and spanning the public and private sectors (e.g., healthcare, food and agriculture, public utilities and safety, manufacturing, transportation, and communications), the subjective well-being of different kinds of essential workers may well have responded differently to the spread of the COVID-19 pandemic and its associated policy measures. This is what we will show below. As pandemic policies became more stringent, healthcare workers had significantly smaller drops in life satisfaction than did other workers, perhaps reflecting their greater freedom of movement and lower fear of job loss, as well as greater societal recognition during the pandemic. On the contrary, the negative effect of the spread of the pandemic (measured by the four-week average daily COVID-19 death rate) on life satisfaction is three times larger for healthcare workers, likely due to their greater exposure to the disease and the deterioration in their working conditions.

Our paper contributes to various strands of the literature. We first add to that on the well-being of healthcare workers. Previous research, both pre- and post-COVID-19, has mostly focused on mental-health outcomes, including burnout, stress, anxiety and depression. This has often relied on relatively small cross-sectional samples covering only healthcare workers (Paris & Hoge, 2010; Coplan *et al.*, 2018; West *et al.*, 2018; Shanafelt *et al.*, 2019; Willard-Grace *et al.*, 2019; Buselli

et al., 2020; Di Tella *et al.*, 2020; Trumello *et al.*, 2020; Vizheh *et al.*, 2020; Hummel *et al.*, 2021; Schug *et al.*, 2021). We also add to the small literature evaluating the particular effects of the pandemic on healthcare workers (or sometimes all essential workers), as compared to the rest of the workforce (e.g., Bell *et al.*, 2021; Toh *et al.*, 2021; Eftekhar *et al.*, 2022; Ferland *et al.*, 2022). The article that is the closest to ours, Bu *et al.* (2022), compares groups of key workers to non-essential workers in England between March 2020 and February 2021 using data from the UCL COVID social study. Healthcare workers were found to have similar levels and trajectories of anxiety and depressive symptoms as non-essential workers. However, existing work on healthcare workers has not effectively disentangled the effects of the pandemic itself from those of pandemic policies. Moreover, the data commonly analysed in this work often only covered the initial stages of the pandemic. To our knowledge, we are the first to leverage arguably exogenous cross-country variations in pandemic policies and pandemic progression to show how these affected the life satisfaction of healthcare workers relative to both other essential workers and the rest of the workforce over a longer pandemic period (of almost three years).¹

The remainder of the paper is organised as follows. Section 2 provides an overview of the data used in the empirical analysis. Section 3 outlines the identification strategy and describes the estimation sample, and Section 4 presents the results. Last, Section 5 concludes.

2. Data

2.1. Individual data: COME-HERE

¹ Our results also add to work on the impact of the pandemic and its policy responses on the subjective well-being of the general population (Aknin *et al.*, 2022; Clark & Lepinteur, 2022), by showing that these are not uniform but differ systematically across workforce categories.

The data used in this paper is from COME-HERE (COVID-19, Mental Health, Resilience and Self-regulation), an ongoing survey conducted by the University of Luxembourg. This survey consists of representative samples (on the basis of age, gender and region of residence) of adults from France, Germany, Italy, Spain and Sweden. COME-HERE is a longitudinal survey and includes information on individuals' living conditions, life events, and mental health during the pandemic, alongside standard sociodemographic characteristics such as age, gender, education, number of children in the household, labour-force status, and country of residence.²

The analysis here covers ten COME-HERE survey waves, spanning just under three years following the COVID-19 outbreak at roughly three-month intervals: April, June, August and November 2020, March, June and November 2021, and February, June and November 2022. There were 8,000 respondents in Wave 1, 86 percent of whom participated in at least one other survey wave. Around 1,500 individuals appear in all ten survey waves.

Subjective well-being is measured at each wave via a standard life satisfaction question: "Overall, in the past week, how satisfied have you been with your life?", with answers on a 11-point Likert scale from 0 (Not at all satisfied) to 10 (Completely satisfied). Subjective well-being scores are considered to be valid, as their cross-section distribution predicts future behaviour and outcomes in panel data (see the review in Clark, 2018, and Kaiser & Oswald, 2022, for a recent contribution).

Wave 1 respondents who were in employment were asked whether they worked in one of the following essential sectors: healthcare, energy production, the food sector, water distribution, waste management, public transport, security, essential financial activities, communication

² Ethics approval was granted by the Ethics Review Panel of the University of Luxembourg (ERP 20-026).

services, and essential public services. We use the reply to this question to separate workers in the healthcare sector from other essential workers in non-healthcare sectors, and those employed in non-essential sectors.

2.2. Pandemic data: the Oxford COVID-19 Government Response Tracker

The Oxford COVID-19 Government Response Tracker, developed by the Blavatnik School of Government at the University of Oxford, provides a comprehensive set of indices and metrics related to pandemic policies and the progression of the COVID-19 pandemic.³

The Stringency Index is one of the key variables in our analysis: this monitors the national-level policy responses to COVID-19, covering nine aspects of containment policies, including school and workplace closures, restrictions on gatherings and travel, stay-at-home requirements, and public-information campaigns. Each aspect is assigned a score, the average of which produces the Stringency Index, which is then rescaled to range from 0 to 100. Higher values of this index correspond to more-stringent (lockdown-style) policy responses to COVID-19.

We will also consider the Economic Support Index in our analysis. This consists of two components: income support and debt relief. The first measures the extent to which governments provide direct cash payments, universal basic income, or income support for those who have lost their jobs or are unable to work. The second relates to governmental decisions to freeze the financial obligations of households, such as loan repayments. As for the Stringency Index, each component is assigned a score, with the average yielding the Economic Support Index, rescaled from 0 to 100. Higher values correspond to more-substantial financial benefits and debt relief to counterbalance the adverse economic effects of COVID-19 on individuals.

³ For more details, see <https://www.bsg.ox.ac.uk/research/covid-19-government-response-tracker#data>.

Both the Stringency Index and Economic Support Index were updated daily from January 1st 2020, to December 31st 2022, enabling the comparison across-country and over time of the intensity of policy responses to the pandemic (Hale *et al.*, 2020). The Oxford COVID-19 Government Response Tracker also provides information on the evolution of the pandemic itself, such as the daily number of COVID-19 cases and deaths, along with vaccination statistics.

3. Empirical Strategy and Estimation Sample

3.1. Empirical Strategy

We wish to understand whether the well-being of healthcare workers, as proxied by their life satisfaction, is different from that of other workers (either in the essential or non-essential sectors), and the role of the spread of the pandemic and the subsequent policy responses in explaining this difference. To do so, we estimate the following Ordinary Least Squares (OLS) regressions:

$$LS_{ijt} = \alpha EW_i + \beta Pandemic_{ijt} + \gamma(EW_i * Pandemic_{ijt}) + \delta X_{ijt} + \lambda_t + \varepsilon_{ijt} \quad (1)$$

$$LS_{ijt} = \beta Pandemic_{ijt} + \gamma(EW_i * Pandemic_{ijt}) + \delta X_{ijt} + \lambda_t + \mu_i + \varepsilon_{ijt} \quad (2)$$

where LS_{ijt} is the life satisfaction of respondent i living in country j at time t , and EW_i is a vector of mutually-exclusive dummies for employment in the healthcare, other essential or non-essential sectors in the first COME-HERE wave. The omitted category in the empirical analysis will be non-essential sector workers.

$Pandemic_{ijt}$ is a vector incorporating both governmental pandemic policy responses and the evolution of the pandemic itself in country j at time t , depending on the interview date of individual i . As in Borga *et al.* (2022), Jabakhanji *et al.* (2022) and Lepinteur *et al.* (2023), the policy variables are the average values over the two weeks prior to the interview date of the Stringency Index and the Economic Support Index. As these policies were not randomly introduced, but rather implemented in response to the spread of COVID-19, we also need to control for the evolution of the pandemic itself. To select the best measure of the latter, we estimate separate regressions in which the dependent variables are the two-week averages of the Stringency Index and Economic Support Index at the interview dates in our estimation sample with a series of plausible candidate measures of the evolution of the pandemic as the independent variables. We also control for country fixed effects. Appendix Table A1 shows the adjusted R^2 figures from these various regressions. As in Clark and Lepinteur (2022), the four-week average daily COVID-19 death rate is the pandemic variable that best predicts the Stringency Index and the Economic Support Index. This is then the variable that appears in $Pandemic_{ijt}$ to capture the role of pandemic severity.

The vector X_{ijt} covers the individual and household characteristics of age, age squared, and dummies for gender, children in the household, living with a partner, higher (*i.e.* post-School) education, net monthly household income categories⁴ and the country of residence. We control for macroeconomic trends via the wave fixed-effects λ_t . Equation (2) differs from Equation (1) in that it includes an individual fixed effect, μ_i . As such, the X_{ijt} vector in Equation (2) does not include age, age squared, education, gender and country fixed effects.

⁴ The categories of net monthly household income are: 0-1250 Euros, 1250-2000 Euros, 2000-4000 Euros, 4000-6000 Euros, 6000-8000 Euros, 8000-12500 Euros, and more than 12500 Euros.

Standard errors are clustered at the Stringency Index * Economic Support Index * COVID-19 death rate level. All of the continuous variables are standardised.

3.2. Estimation Sample

The estimation sample is all employed COME-HERE respondents aged between 18 and 65 who provide valid life-satisfaction information. As Equation (2) relies on within-individual variations, we only retain individuals who appear in the survey at least twice in all regressions. As noted above, COME-HERE respondents were asked only in April 2020 (the first COME-HERE wave) whether they work in an essential sector (and, if so, in which sector). The EW_i variable is thus time-invariant, and so is subsumed in the fixed effect in Equation (2). To help ensure that the sample does not include workers who changed sectors over time, we keep only those individuals who did not report a job loss since the first wave.⁵

The final estimation sample consists of 20,881 observations on 3,496 individuals. The descriptive statistics of this sample appear in Table 1. France, Germany, Italy, and Spain account for a little over 20 percent of the sample each, with the figure for Sweden being lower at 12 percent. Regarding the job sector, 57 percent of observations are on non-essential workers, 8 percent on healthcare workers, and the remaining 34 percent on ‘other’ essential workers. Average age is 43, and there are slightly more observations on men than women. The majority of observations are on individuals who have higher education (66 percent). Regarding household structure, 62 percent of observations are on those cohabiting with a partner, and 44 percent on those with at least one dependent child in the household. The average life satisfaction score is 6.44: this figure is higher

⁵ These selection criteria raise potential attrition concerns, from respondents leaving the survey or changes in labour-force status, such as becoming unemployed or changing jobs. This is addressed in Appendix Table A2, which shows that the probability of dropping out of the survey or being excluded from the sample due to a job change or unemployment does not differ significantly between workers in the healthcare, other essential, and non-essential sectors.

for healthcare workers (6.75) than for other essential workers (6.42) and non-essential workers (6.41). For all groups, the within-standard deviation of life satisfaction is around 1.30 and is three-quarters of the between-standard deviation.

We analyse selection into healthcare work via a multinomial logit predicting the three values of EW_i (healthcare, other essential, and non-essential sectors in the first wave of COME-HERE). The explanatory variables are the pre-pandemic individual characteristics in the first model, and the potentially more-endogenous characteristics of household structure and income in the second. The results in Appendix Table A3 show that women and the more-educated are more likely to sort into healthcare work. We also find that individuals in this sector reported higher equivalent net monthly income before the pandemic (as in Glied *et al.*, 2015). None of the other variables in the regression (such as age and partnership status) attract significant estimated coefficients. The workers in ‘other’ essential sectors are older, male, with lower education, and more children. Conversely, those in non-essential sectors are younger, more educated and have fewer children. Overall, selection into the healthcare sector (or any other sector) does not seem to be random, so that our empirical results may be biased. The gold-standard solution here would appeal to some exogenous variation in the probability of healthcare work. However, it is not easy to find powerful instruments that would work across countries, and we therefore introduce the control variables X_{ijt} to help tackle selection issues. In addition, the EW_i variable is time-invariant (being measured only in April 2020), and it could be argued that the determinants of sorting into different sectors are also themselves time-invariant. In this case, the inclusion of the individual fixed effects μ_i should effectively eliminate the bias linked to selection. As such, the fixed-effect Equation (2) is our preferred specification.

4. Healthcare Workers during the Pandemic: Empirical Results

4.1. Main Results

The average life satisfaction scores of workers in the healthcare, other essential, and non-essential sectors are plotted in Figure 1 separately for each COME-HERE survey wave. The time profile of life satisfaction during the pandemic is similar across all three employment categories: there is a double hump, with peaks in the Summer of 2020 and Summer-Autumn 2021. The difference in life satisfaction between other essential and non-essential workers is consistently small in size and never significant. On the contrary, the satisfaction of healthcare workers is always higher than that in the other two groups, although there is something of a convergence between sectors from 2021 onwards.

While Figure 1 plots the life-satisfaction gaps between healthcare workers and the rest of the workforce during the COVID-19 period, it does not show (i) how satisfaction changed with the onset of the pandemic, and whether healthcare workers were already significantly more satisfied than other workers pre-2020, or (ii) whether high-satisfaction individuals started to work in healthcare at the beginning of the pandemic. These issues can be addressed with data from two well-known panel surveys, which provide life-satisfaction information in the pre-pandemic period. Figures A1 and A2 depict the 2009-2020 life satisfaction trends for workers in the three sectors above in the UK Household Longitudinal Survey (UKHLS) and the German Socioeconomic Panel Survey (SOEP), respectively. Although the time trends differ in the UK and Germany, it is clear that healthcare workers systematically reported higher life satisfaction than the other groups in the pre-pandemic period. The higher satisfaction of healthcare workers during COVID-19 does not then (only) reflect satisfied workers choosing healthcare jobs as the pandemic unfolded. This selection argument would in addition require a ‘reserve army’ of workers with the necessary skills

to take on healthcare jobs at short notice. We thus conclude that the life-satisfaction gaps between workers in Figure 1 do not reflect selection.

Figure 1 plots the average values of life satisfaction; In Figure 2 we explore the roles of country fixed effects and the pandemic variables in explaining these values. The unbroken line in Figure 2 shows the estimated wave coefficients in a regression where we add country dummies. The level of life satisfaction in April 2020 serves as the baseline here, and the double hump appears clearly. The dashed line in Figure 2 shows the effect of controlling for the pandemic variables in $Pandemic_{ijt}$. There are now only two significant wave coefficients (June 2021 and June 2022), which could simply reflect standard seasonal effects in subjective well-being. Overall, the comparison of Figures 1 and 2 suggests that pandemic evolution and pandemic policies may well explain a large part of the double hump.

Table 2 presents the regression results from Equations (1) and (2), to help understand why healthcare workers are more satisfied.⁶ The figures in Column (1) come from a regression that only controls for the sector, wave and country dummies. Column (2) is a simplified version of Equation (1), where we add the pandemic variables and their interactions with the sector. Column (3) then adds the pre-determined characteristics, and Column (4) the time-varying controls. Last, the fixed-effect results from Equation (2), which rely only on within-individual variations, appear in Column (5).

In the first column of Table 2, as in Figure 1, healthcare workers report significantly greater life satisfaction than do other workers. There are two plausible explanations of the higher satisfaction of healthcare workers. First, a greater sense of meaning from the usefulness of the job compared

⁶ The full set of estimated coefficients from these regressions appears in Appendix Table A4.

to jobs in other sectors, and social prestige. Both of these mechanisms may be particularly salient during a global health crisis. Second, the correlation may be spurious and reflect the selection of happier individuals into healthcare work. This latter interpretation is addressed in Columns (3) to (4), where we control for potential confounders. We continue to find higher healthcare-worker satisfaction, and of a size that is similar to that in Column (1). If the set of control variables adequately addresses omitted-variable bias, the estimate in Column (4) can be interpreted as causal: the higher life satisfaction of healthcare workers does then indeed reflect job-specific factors, such as meaning and prestige.

Columns (2) to (5) show the estimated coefficients on the Stringency Index and COVID-19 death rate (and the interactions with sector): these are notably stable across the different empirical specifications. As revealed by the net effects in the bottom panel of Table 2, a one standard-deviation rise in stringency has no effect on the life satisfaction of healthcare workers, but systematically reduces that of all other workers. On the contrary, the COVID-19 death rate has significant life-satisfaction consequences for healthcare workers in almost all of the specifications. In the fixed-effect estimates in the last column of Table 2 (our preferred specification), the effects of the pandemic variable are statistically different for healthcare workers at conventional levels, and a one standard deviation rise in the COVID-19 death rate reduces their life satisfaction by 9% of a standard deviation (with a figure of 3% for other workers). As a benchmark, this 9% drop is similar to the estimated gap between a net monthly household income of 2000-8000 Euros and below 1250 Euros.

In Clark & Lepinteur (2022), who used COME-HERE data from 2020 only, a one standard deviation rise in stringency (the COVID-19 death rate) reduced the life satisfaction of the whole population by 0.046 standard deviations (an insignificant 0.017 standard deviations). Our sample

covers two more years, and we find a somewhat-smaller average effect of stringency and a larger impact of pandemic progression (when calculating the weighted sums of the estimated coefficients across the three sectors). This is consistent with the heterogeneity analysis in Clark & Lepinteur (2022) that suggested a smaller effect of the Stringency Index for the employed.

Why are healthcare workers different from other workers? More-stringent policies may have been less disruptive to their daily lives (as they continued to work) and potentially posed less of a threat to their future employment. In addition, these restrictions may well have enhanced the social prestige that healthcare workers derive from their jobs. Regarding the COVID-19 death rate, healthcare workers may suffer more due to their heightened exposure to the virus, and therefore a greater risk of infection for themselves and other household members. The rapid spread of infection also produced severe hospital overcrowding and shortages of essential medical equipment. The drastic deterioration in working conditions, coupled with a greater infection risk, probably help explain the greater sensitivity of healthcare workers' life satisfaction to the spread of the pandemic.

4.2. Robustness Checks

Table 3 presents a battery of robustness checks. The first column reproduces the baseline results, for comparison purposes. Appendix Table A3 showed that selection into healthcare work is not random. In addition, in Clark & Lepinteur (2022) the effects of the pandemic and its policies on life satisfaction varied between certain types of respondents. Following the approach taken in Senik *et al.* (2023), we thus interact all of the pandemic variables with the control variables in column (2) of Table 3. The consistent estimated interaction terms for healthcare workers suggest that we are not capturing spurious heterogeneity effects.

Column (3) looks at the effect of changing the reference periods for the pandemic variables: the Stringency Index is set to the index value on the day of the interview, and COVID-19 deaths are now the average figures over the two weeks prior to the interview. This has no material impact on the results. To address concerns about the ordinal nature of life satisfaction, we apply the ordered logit model with fixed-effects developed by Baetschmann *et al.* (2015) in Column (4); and in response to the critique of potential sign reversals in any estimation of an ordered dependent variable in Bond & Lang (2019), Column (5) estimates a heteroskedastic median regression as proposed in Chen *et al.* (2022). In both cases the results are qualitatively unchanged.

Last, Column (6) addresses attrition by re-weighting the observations in the estimation sample to conserve their national representativeness (in terms of age, gender, and region of residence – as in the initial Wave 1 sample stratification). We continue to find that healthcare workers are less affected by stringent policies, but more-heavily affected by the spread of the pandemic.

5. Conclusion

We analyse ten waves of quarterly panel data since the start of the pandemic in five European countries. We find a distinctive double-humped pattern in worker life satisfaction during the pandemic, with two peaks in the Summer of 2020 and Summer-Autumn 2021: these are mostly explained by the changes in the progression of the pandemic and the stringency of pandemic policies. As in the pre-COVID-19 era, healthcare workers consistently reported higher life satisfaction throughout most of the pandemic, suggesting that their job's societal utility and prestige may have continued to play a crucial role during this challenging period.

Both the spread of the pandemic and policy stringency are overall negatively correlated with workers' life satisfaction. However, the experience of healthcare workers is distinct from that of other workers, with there being no effect of more-stringent policies for them but a greater well-being loss as the COVID-19 death rate rises. Healthcare workers, who are on the front line, faced greater risks and a sharp deterioration in working conditions as public health nosedived, but at the same time were less affected by the physical constraints associated with stay-at-home orders.

These findings have significant policy implications. The greater fall in life satisfaction for healthcare workers due to the pandemic's progression underscores the importance of prioritising their well-being. Greater support for these essential workers could then yield social benefits by enhancing their happiness, reducing turnover, and ultimately improving the delivery of healthcare services.

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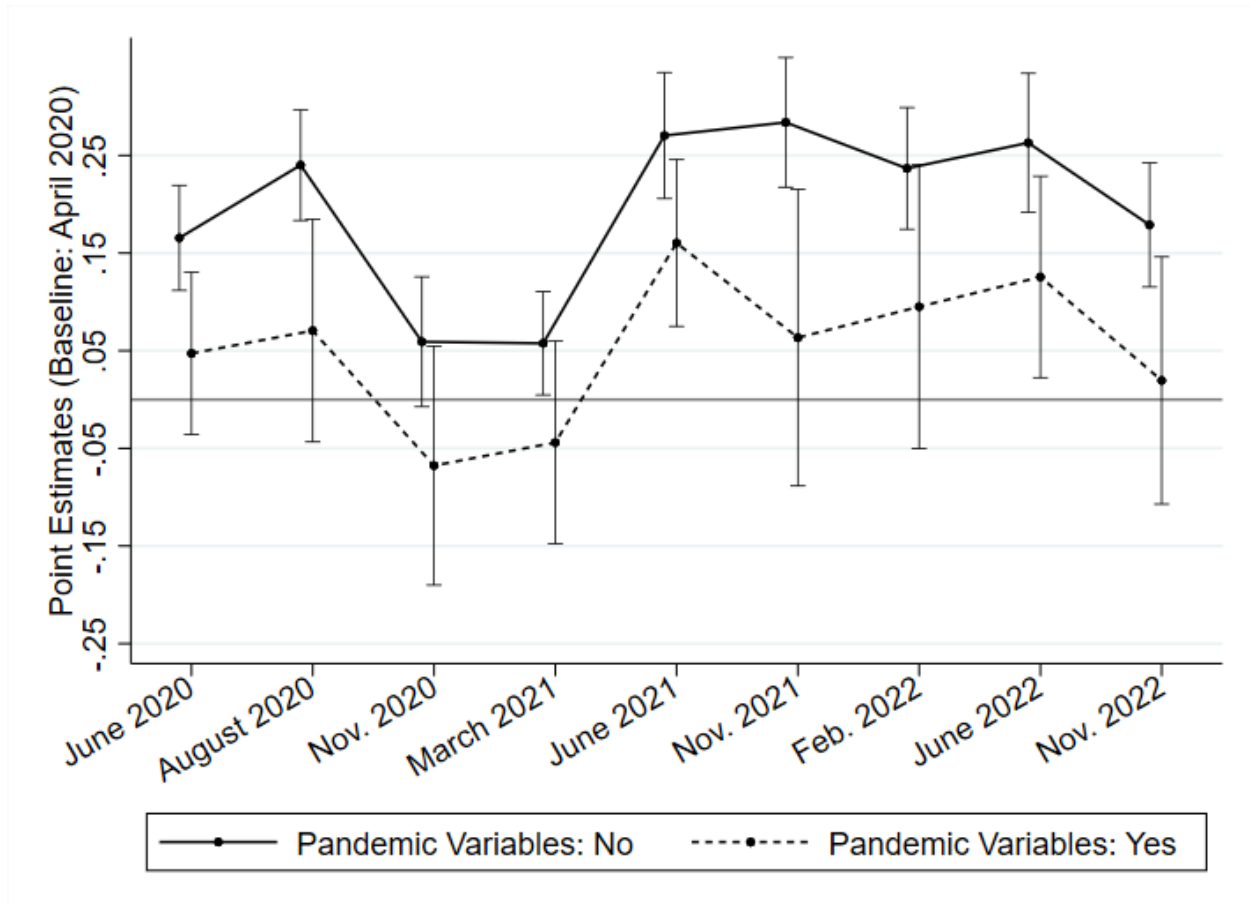
Figures and Tables:

Figure 1: Life Satisfaction during the Pandemic by Employment Sector



Notes: These figures refer to employed respondents who did not switch job during the pandemic in the first ten waves of the COME-HERE survey. 95% confidence intervals are depicted.

Figure 2: Life Satisfaction during the Pandemic: Wave Fixed Effects



Notes: These figures refer to employed respondents who did not switch job during the pandemic in the first ten waves of the COME-HERE survey. The unbroken line depicts the survey wave fixed effects in a life satisfaction-regression where we only control for country of residence; the dotted black line depicts the same survey wave fixed-effects when we additionally control for the Stringency Index (two-week average), Economic Support Index (two-week average) and the COVID-19 death rate (four-week average). 95% confidence intervals are depicted.

Table 1: Descriptive statistics

	Mean	SD	Min	Max
Life satisfaction	6.44	2.11	0	10
Stringency Index (2-week average)	47.70	10.33	26.85	75.19
COVID-19 death rate (4-week average/100,000)	0.23	0.15	0.05	0.61
Economic Support Index (2-week average)	50.88	15.93	16.67	70.83
Essential worker:				
No	0.57		0	1
Healthcare	0.08		0	1
Other	0.34		0	1
Age	43.22	11.46	18	65
Female	0.48		0	1
At least higher education	0.66		0	1
At least one child in HH	0.44		0	1
Living with a partner	0.62		0	1
HH net monthly income (categories)				
Less than 1250 Euros	0.07		0	1
1250-2000 Euros	0.20		0	1
2000-4000 Euros	0.42		0	1
4000-6000 Euros	0.17		0	1
6000-8000 Euros	0.05		0	1
8000-12500 Euros	0.03		0	1
More than 12500 Euros	0.01		0	1
Missing	0.06		0	1
Country of residence:				
France	0.23		0	1
Germany	0.21		0	1
Italy	0.22		0	1
Spain	0.23		0	1
Sweden	0.12		0	1
<i>Observations</i>	<i>20881</i>			
<i>Individuals</i>	<i>3496</i>			

Note: These numbers refer to employed respondents who did not switch job during the pandemic in the first ten waves of the COME-HERE survey.

Table 2: The effect of the pandemic and pandemic policies on life satisfaction by sector: Pooled and panel regressions

	Life satisfaction (std)				
	(1)	(2)	(3)	(4)	(5)
Essential worker: Healthcare	0.165*** (0.025)	0.159*** (0.025)	0.167*** (0.024)	0.131*** (0.024)	
Essential worker: Other	0.010 (0.015)	0.011 (0.015)	0.002 (0.015)	-0.013 (0.014)	
Stringency Index (2-weeks average)		-0.071*** (0.022)	-0.061*** (0.021)	-0.054*** (0.021)	-0.031** (0.014)
Interacted with:					
Essential worker: Healthcare		0.048 (0.032)	0.039 (0.032)	0.028 (0.032)	0.048** (0.024)
Essential worker: Other		0.010 (0.017)	-0.000 (0.017)	-0.009 (0.017)	0.001 (0.014)
COVID-19 death rate (4-weeks average)		-0.015 (0.019)	-0.018 (0.019)	-0.023 (0.018)	-0.034** (0.014)
Interacted with:					
Essential worker: Healthcare		-0.036 (0.029)	-0.037 (0.029)	-0.038 (0.029)	-0.057*** (0.021)
Essential worker: Other		-0.006 (0.017)	-0.004 (0.017)	0.000 (0.017)	0.001 (0.013)
<hr/>					
<i>Net effect of Stringency Index for:</i>					
Essential worker: No		-0.071*** (0.022)	-0.061*** (0.021)	-0.054*** (0.021)	-0.031** (0.014)
Essential worker: Healthcare		-0.023 (0.034)	-0.022 (0.033)	-0.025 (0.033)	0.017 (0.026)
Essential worker: Other		-0.061** (0.025)	-0.062** (0.024)	-0.062*** (0.023)	-0.030** (0.014)
<i>Net effect of COVID-19 death rate for:</i>					
Essential worker: No		-0.015 (0.019)	-0.018 (0.019)	-0.023 (0.018)	-0.034** (0.014)
Essential worker: Healthcare		-0.051 (0.032)	-0.055* (0.031)	-0.061* (0.031)	-0.091*** (0.026)
Essential worker: Other		-0.021 (0.021)	-0.022 (0.021)	-0.022 (0.021)	-0.033** (0.016)
<hr/>					
<i>Pre-determined Characteristics</i>	No	No	Yes	Yes	Yes
<i>Time-varying Characteristics</i>	No	No	No	Yes	Yes
<i>Individual Fixed Effects</i>	No	No	No	No	Yes
<i>Observations</i>	20881	20881	20881	20881	20881

Notes: These are linear regressions. The sample here refers to employed respondents who did not switch job during the pandemic in the first ten waves of the COME-HERE survey. The Stringency Index and death rate variable are all standardised over the estimation sample. Standard errors in parentheses are clustered at the Stringency Index*Economic Support Index*COVID-19 death rate level. Pre-determined characteristics are age and its square, and dummies for gender and higher education. Time-varying characteristics are dummies for children in the household, living with partner and net monthly household income categories. All regressions control for survey wave fixed-effects. Country of residence fixed are included in columns (1) to (4) and individual fixed effects are included in column (5). *, **, and *** respectively indicate significance levels of 10%, 5% and 1%

Table 3: The effect of the pandemic and pandemic policies on life satisfaction: Panel Results - Robustness Checks

	Life Satisfaction (std)					
	(1)	(2)	(3)	(4)	(5)	(6)
Stringency Index	-0.031** (0.014)	-0.050 (0.105)	-0.056*** (0.018)	-0.101** (0.045)	-0.075*** (0.029)	-0.045** (0.019)
Interacted with:						
Essential worker: Healthcare	0.048** (0.024)	0.056** (0.024)	0.083*** (0.024)	0.141* (0.085)	0.039 (0.047)	0.062** (0.030)
Essential worker: Other	0.001 (0.014)	0.001 (0.014)	0.010 (0.012)	0.021 (0.052)	-0.002 (0.028)	0.003 (0.019)
COVID-19 death rate	-0.034** (0.014)	0.013 (0.078)	-0.001 (0.013)	-0.104** (0.043)	-0.029 (0.028)	-0.024 (0.018)
Interacted with:						
Essential worker: Healthcare	-0.057*** (0.021)	-0.049** (0.021)	-0.046** (0.019)	-0.177** (0.073)	-0.049 (0.043)	-0.070*** (0.026)
Essential worker: Other	0.001 (0.013)	0.002 (0.012)	-0.003 (0.010)	0.010 (0.041)	0.003 (0.025)	-0.006 (0.016)
<i>Observations</i>	20881	20881	20881	20881	20881	20881

Notes: Column (1) shows the baseline results. These are linear regressions except in Columns (4) and (5), which are results from an ordered logit model with fixed effects and a heteroskedastic median regression respectively. The sample here refers to employed respondents who did not switch job during the pandemic in the first ten waves of the COME-HERE survey. We use the average value over the two weeks prior to the interview date of the Stringency Index and the average value over the four weeks prior to the interview date of the daily COVID-19 death rates in all specifications, except in Column (3) where we use the value of the Stringency Index at the interview date and the average value over the two weeks prior to the interview date of the COVID-19 death rates. All the values for the Stringency Index and COVID-19 death rate variables are standardised over the estimation sample. Standard errors in parentheses are clustered at the Stringency Index*Economic Support Index* COVID-19 death rate level. The controls are dummies for children in the household, living with partner, net monthly household income categories, and individual and survey wave fixed-effects. All pandemic variables are interacted with all the individual covariates in Column (2). Column (6) applies cross-sectional weights to preserve national representativeness. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

Online Appendix:

Figure A1: Life Satisfaction pre-Pandemic by Sector: UKHLS

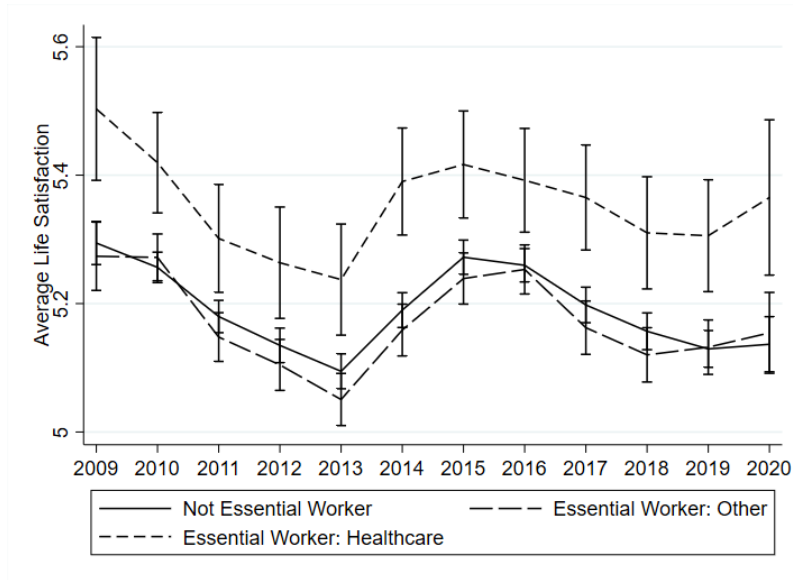
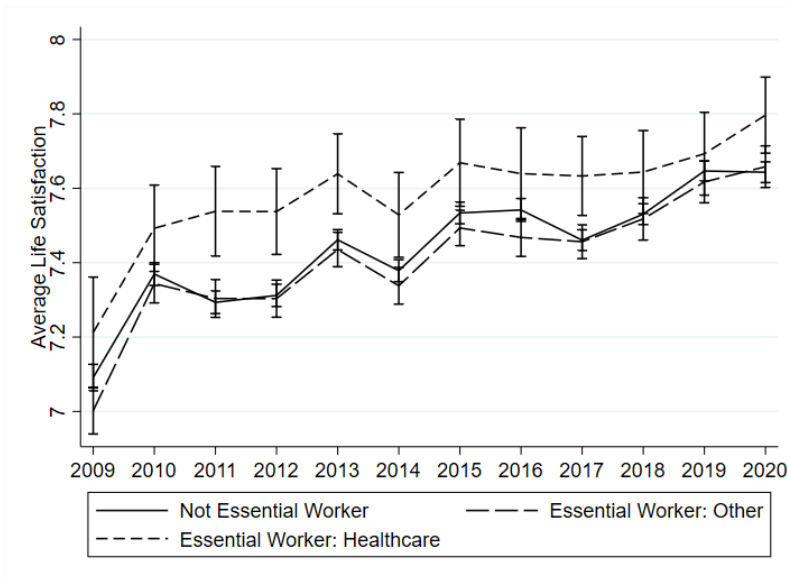


Figure A2: Life Satisfaction pre-Pandemic by Sector: SOEP



Notes: These figures refer to employed respondents in the 2009-2020 survey waves of the UKHLS (top panel) and the SOEP (bottom panel). Life satisfaction is measured on a 7-point scale in the UKHLS and an 11-point scale in the SOEP. 95% confidence intervals are depicted.

Table A1: Pandemic Variables as Predictors of Pandemic Policies – Quality-of-Fit Comparisons

	Stringency Index	Economic Support Index
Number of daily COVID-19 deaths:		
2 weeks average prior the interview date	0.421	0.881
4 weeks average prior the interview date	0.435	0.882
Number of daily COVID-19 deaths/Population in 2019:		
2 weeks average prior the interview date	0.421	0.897
4 weeks average prior the interview date	0.436	0.890
Number of daily COVID-19 cases:		
2 weeks average prior the interview date	0.422	0.895
4 weeks average prior the interview date	0.427	0.888
Number of daily COVID-19 cases/Population in 2019:		
2 weeks average prior the interview date	0.427	0.889
4 weeks average prior the interview date	0.432	0.889

Notes: These are the adjusted R² figures from linear regressions. Each regression includes country fixed effects and is based on the 1140 observations corresponding to the 1140 country of residence*interview dates in the first ten COME-HERE survey waves.

Table A2: The effect of the pandemic and pandemic policies on attrition by sector: Pooled and panel regressions

	P(Leave survey in t+1)				P(Leave sample in t+1)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Essential worker: Healthcare	0.004 (0.008)	0.004 (0.008)	0.004 (0.008)		0.008 (0.009)	0.009 (0.008)	0.011 (0.008)	
Essential worker: Other	0.003 (0.005)	0.007 (0.005)	0.007 (0.005)		0.005 (0.005)	0.010** (0.005)	0.012** (0.005)	
Stringency Index (2-weeks average)	0.012 (0.009)	0.009 (0.009)	0.009 (0.009)	0.007 (0.007)	0.017 (0.010)	0.013 (0.010)	0.013 (0.010)	0.015** (0.007)
Interacted with:								
Essential worker: Healthcare	-0.007 (0.012)	-0.005 (0.012)	-0.005 (0.012)	-0.012 (0.013)	-0.014 (0.013)	-0.012 (0.013)	-0.012 (0.013)	-0.024* (0.013)
Essential worker: Other	-0.004 (0.007)	-0.000 (0.007)	0.000 (0.007)	-0.003 (0.007)	-0.010 (0.007)	-0.005 (0.007)	-0.005 (0.007)	-0.014* (0.007)
COVID-19 death rate (4-weeks average)	-0.012 (0.009)	-0.012 (0.009)	-0.012 (0.009)	-0.007 (0.010)	-0.013 (0.009)	-0.013 (0.009)	-0.013 (0.009)	-0.011 (0.011)
Interacted with:								
Essential worker: Healthcare	0.004 (0.010)	0.004 (0.010)	0.004 (0.010)	0.008 (0.010)	0.006 (0.011)	0.005 (0.011)	0.005 (0.011)	0.013 (0.010)
Essential worker: Other	-0.003 (0.006)	-0.004 (0.006)	-0.004 (0.006)	0.001 (0.005)	0.001 (0.006)	0.000 (0.007)	-0.000 (0.007)	0.006 (0.006)
<i>Observations</i>	19591	19591	19591	19591	19591	19591	19591	19591

Notes: These are linear regressions. The sample here refers to employed respondents who did not switch job during the pandemic in the first ten waves of the COME-HERE survey. The Stringency Index and average daily death rate variable are all standardised over the estimation sample. Standard errors in parentheses are clustered at the Stringency Index*Economic Support Index*average daily COVID-19 deaths level. Pre-determined characteristics (age and its square, and dummies for gender and higher education) are included in columns (2), (3), (6) and (7). Time-varying characteristics (dummies for children in the household, living with partner and net monthly household income categories) are included in columns (3), (4), (7) and (8). All regressions control for survey wave fixed-effects. Country of residence fixed effects are included in columns (1), (2), (3), (5), (6) and (7) and individual fixed effects are included in columns (4) and (8). *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

Table A3: Selection into Essential Jobs – Multinomial Logit results

	Essential Worker:			Essential Worker:		
	No	Healthcare	Other	No	Healthcare	Other
Age/10	-0.014* (0.008)	-0.000 (0.004)	0.014** (0.007)	-0.012 (0.008)	-0.003 (0.004)	0.015** (0.008)
Female	0.025 (0.018)	0.050*** (0.011)	-0.075*** (0.017)	0.016 (0.018)	0.054*** (0.011)	-0.070*** (0.017)
At least higher education	0.054*** (0.019)	0.028** (0.012)	-0.081*** (0.018)	0.069*** (0.020)	0.020* (0.012)	-0.089*** (0.019)
No. children				-0.053*** (0.020)	-0.010 (0.011)	0.063*** (0.019)
Living with a partner				-0.007 (0.021)	0.002 (0.012)	0.005 (0.020)
Eq. HH monthly income (log of PPP in January 2020)				-0.053*** (0.015)	0.036*** (0.009)	0.017 (0.015)
<i>Log likelihood</i>		-2758.4			-2740.5	
<i>Observations</i>		3085			3085	

Notes: These are marginal effects from multinomial-logit regressions. The sample is employed respondents in the first wave of the COME-HERE survey. All regressions include country of residence fixed-effects. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.

Table A4: The effect of the pandemic and pandemic policies on life satisfaction by sector:
Pooled and panel regressions – full results

	Life satisfaction (std)				
	(1)	(2)	(3)	(4)	(5)
Essential worker: Healthcare	0.165*** (0.025)	0.159*** (0.025)	0.167*** (0.024)	0.131*** (0.024)	
Essential worker: Other	0.010 (0.015)	0.011 (0.015)	0.002 (0.015)	-0.013 (0.014)	
Stringency Index (2-weeks average)		-0.071*** (0.022)	-0.061*** (0.021)	-0.054*** (0.021)	-0.031** (0.014)
Interacted with:					
Essential worker: Healthcare		0.048 (0.032)	0.039 (0.032)	0.028 (0.032)	0.048** (0.024)
Essential worker: Other		0.010 (0.017)	-0.000 (0.017)	-0.009 (0.017)	0.001 (0.014)
Economic Support Index (2-weeks average)		-0.011 (0.033)	-0.012 (0.033)	-0.008 (0.032)	0.005 (0.022)
Interacted with:					
Essential worker: Healthcare		-0.086*** (0.029)	-0.085*** (0.029)	-0.080*** (0.028)	-0.031 (0.041)
Essential worker: Other		0.031* (0.018)	0.030* (0.018)	0.034* (0.017)	0.016 (0.026)
COVID-19 death rate (4-weeks average)		-0.015 (0.019)	-0.018 (0.019)	-0.023 (0.018)	-0.034** (0.014)
Interacted with:					
Essential worker: Healthcare		-0.036 (0.029)	-0.037 (0.029)	-0.038 (0.029)	-0.057*** (0.021)
Essential worker: Other		-0.006 (0.017)	-0.004 (0.017)	0.000 (0.017)	0.001 (0.013)
Age			-0.003 (0.004)	-0.019*** (0.004)	
Age ² /100			0.012** (0.005)	0.029*** (0.005)	
Female			-0.097*** (0.013)	-0.063*** (0.014)	
At least higher education			0.039** (0.016)	-0.017 (0.015)	
Child in household				0.064*** (0.016)	-0.098** (0.040)
Living with partner				0.103*** (0.016)	0.029 (0.028)

1250-2000 Euros	0.113 ^{***}	0.022
	(0.034)	(0.032)
2000-4000 Euros	0.283 ^{***}	0.124 ^{***}
	(0.033)	(0.036)
4000-6000 Euros	0.399 ^{***}	0.110 ^{***}
	(0.036)	(0.041)
6000-8000 Euros	0.409 ^{***}	0.101 [*]
	(0.045)	(0.053)
8000-12500 Euros	0.545 ^{***}	0.225 ^{***}
	(0.049)	(0.063)
More than 12500 Euros	0.490 ^{***}	0.240 ^{***}
	(0.073)	(0.080)
Missing	0.213 ^{***}	0.095 [*]
	(0.042)	(0.052)

<i>Wave and country Fixed Effects</i>	Yes	Yes	Yes	Yes	Yes
<i>Observations</i>	20881	20881	20881	20881	20881

Notes: These are linear regressions. The sample here refers to employed respondents who did not switch job during the pandemic in the first ten waves of the COME-HERE survey. The Stringency Index, Economic Support Index and death rate variables are all standardised over the estimation sample. Standard errors in parentheses are clustered at the Stringency Index*Economic Support Index*average daily COVID-19 deaths level. *, **, and *** respectively indicate significance levels of 10%, 5% and 1%.