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Life Dissatisfaction and Anxiety in COVID-19 pandemic

Pedraza P. de,
Guzi M.,
Tijdens K.

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Joint Research Centre

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Contact information
Name: Pablo de Pedraza
Address: DG Joint Research Centre
Directorate I – Competences, Unit I.1 - Monitoring, Indicators and Impact Evaluation.
Via E. Fermi 2749 – I-21027 – Ispra (Va) - ITALY
Email: pablo.depedraza@ec.europa.eu
Tel.: +39 0332 78 3805

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Authors

Pablo de Pedraza, JRC European Commission

Martin Guzi, Masaryk University, CELSI, IZA and GLO

Kea Tijdens, AIAS University of Amsterdam and GLO

Abstract

The rising numbers of COVID-19 cases and deaths, prolonged lockdowns, substantial restrictions on public life and an economic downturn negatively affect personal well-being. In this paper, we explore COVID-19-related determinants of life dissatisfaction and feelings of anxiety using data collected from March 23 to April 30 2020 in 25 advanced and developing countries from four continents. We find that persons with better general health, with a paid job, living with a partner, daily exercising and those avoiding loneliness report less dissatisfaction and less anxiety. The presence of children and a pet in the household has no effect. Women report anxiety feelings more often than men. Older people report lower dissatisfaction and anxiety, remarkable given that the older population is among the most vulnerable in the current pandemic. Job-related changes due to COVID-19 such as income reduction and increase or decrease of workload are associated with more dissatisfaction and more anxiety. In reaction to the pandemic governments have adopted a range of measures. We show that restrictions on mobility and requirements to wear protective gear in public increase dissatisfaction and that the state-imposed emergency increase feelings of anxiety. We find that a growing number of confirmed COVID-19 cases increases dissatisfaction and anxiety but that this effect levels off with a higher number of cases. Our findings support targeted government policies to preserve economic security, and increase stability of employment.

JEL classification: I31, I38, P51, D6

Key words: Covid-19, life dissatisfaction, anxiety, public policy

Introduction

The COVID-19 pandemic has affected individuals, economies and societies in each and every respect. The rising numbers of COVID-19 cases and deaths, prolonged lockdowns, substantial restrictions on public life and an economic downturn, are likely to negatively affect personal well-being and mental health. This paper provides new evidence by mapping the determinants of self-reported life dissatisfaction and feelings of anxiety in 25 advanced and developing countries during the COVID-19 pandemic situation in March and April 2020. Using data from a continuous voluntary web survey, four research objectives are explored. The first builds on existing knowledge and explores how personal characteristics impact on individual life dissatisfaction and anxiety. The second objective is new as it analyses how job-related consequences of COVID-19 affect life dissatisfaction and anxiety. The third and the fourth objective are also new as they study how the share of COVID-19-infected persons in the population and selected government measures affect life dissatisfaction and anxiety. This evaluation may inform policymakers on how state-enforced measures affect people's lives during lockdowns (Frijters et al. 2020; Fetzer et al. 2020).

Our exploration builds upon existing life satisfaction literature (Clark and Oswald 1994; Blanchflower and Oswald 2004). The identification of COVID-19-related determinants is useful and important for several reasons. First, self-reported life satisfaction is the internal subjective assessment of life through an individual's retrospective assessment of his or her experienced utility (Kahneman and Sugden 2005). Here, satisfaction scores reflect both subjective and objective circumstances. Second, personal characteristics (gender, education, marital and labour force status) are important determinants of life satisfaction, which makes satisfaction moderately stable over time. Third, fluctuations in satisfaction are related to contextual circumstances at national level (inflation, unemployment, immigration) beyond personal circumstances (Di Tella et al. 2001; Akay et al. 2017; Pedraza et al. 2020). Fourth, several major events in work and family life such as marriage, divorce, childbirth, or job loss have shown to affect satisfaction levels (Lucas and Donnellan 2007). In our analysis we look at determinants at individual and at country level, which help to understand channels through which COVID-19 may have affected life satisfaction and feelings of anxiety. From a policy perspective, it is important to identify groups struggling most heavily due to COVID-19.

In a reaction to the pandemic, governments have adopted a range of different measures to tackle the impact and the spread of the coronavirus. These measures may have psychological and economic consequences. Fetzer et al. (2020) highlight that policy-makers by adopting measures to tackle the spread should also consider their impact on the mental health of the population. Social distancing and self-isolation increase the risks of social isolation and loneliness. State-imposed lockdowns may lead to income reduction and greater economic insecurity. We argue that evaluations of country-specific conditions related to the pandemic and government measures adopted will help to illustrate policymaking.

In this study, we use data from the continuous, voluntary coronavirus web-survey conducted by WageIndicator Foundation in collaboration with the University of Amsterdam and Unit I.1 of the JRC Ispra of the European Commission. Other early studies documenting the impact of COVID-19 on health, work, personal and family situations use also data from continuous voluntary web-surveys (Fetzer et al. 2020;

Haiyang et al. 2020; Baert et al. 2020). Web-surveys can be established fast and by continuous sampling allow to study rapidly changing situations such as the current pandemic. Web-surveys also enable a more detailed exploration of the COVID-19 consequences than other non-reactive online data (Brodeur et al. 2020).

A drawback of voluntary web surveys is that conclusions are not based on representative samples and therefore cannot be extrapolated to the whole population. Due to self-selection, higher educated and younger people are more likely to participate in these surveys. Web-surveys, if not targeted, do not capture specific groups such as those tested positively for COVID-19 or people with severe health symptoms. The application of post-stratification techniques can help to at least partly correct the bias caused by self-selection and under-representation (Pedraza et al. 2010; Tourangeau et al. 2013). This paper is explorative and focuses on the interpretation of consequences of the pandemic on the sample obtained. We do not investigate the sample bias in detail. In future research it will be possible to use better data to validate our findings by using national representative surveys (Belot et al. 2020).

We model the impact on two variables, notably life dissatisfaction and feelings of anxiety. We obtain dissatisfaction measure by reversing the scale of life satisfaction question hence both our indicators identify human suffering. Our findings are in general consistent with the literature on life satisfaction. Healthier people, those with a paid job, daily exercising, and those suffering less from loneliness report less dissatisfaction and less anxiety. We find that a higher age is related to lower levels of anxiety and dissatisfaction despite the fact that older people are more vulnerable in the COVID-19 pandemic. Women report feelings of anxiety more often than men do. Higher educated people report less disssatisfaction levels but the risk of anxiety does not depend on education. Living with a partner helps to keep satisfaction high but does not affect anxiety. The presence of children or a pet in the household do not have an effect.

The COVID-19 pandemic has already impacted the world of work (Baert et al. 2020; Alipour et al. 2020; ILO 2020). Our survey includes several questions to study the work-related impact of the pandemic. Two-thirds of the respondents in the survey experienced changes in their workload and a quarter of respondents experienced an income reduction due to COVID-19. We show that these two changes negatively affect satisfaction and anxiety.

In a reaction to the pandemic governments have adopted measures at different moments allowing to identify the impact of those measures depending on the date individuals completed the survey .We have combined the data of the survey and selected government measures to evaluate which measures have affected personal well-being. The restrictions on mobility and requirements to wear protective gear in public increase dissatisfaction and the state-imposed emergency measures increase feelings of anxiety.

Finally, we show that life dissatisfaction and anxiety are positively influenced by the cumulative number of COVID-19 cases (measured per 1,000 of the population). The media frequently documented the rapid spread of the coronavirus by indicating a growing number of confirmed cases. We find that at the beginning of the pandemic an increasing number of cases induced a negative effect on personal wellbeing but that this effect levelled off when the number of cases was high.

In view of the results we infer some messages that may be relevant for policy-makers confronted with the COVID-19 pandemic. We conclude that protecting jobs implies the protection of citizens' well-being. That conclusion applies to the lockdown period we studied but most likely also to the forthcoming and much needed economic, sociological and psychological recovery.

The structure of this paper is straightforward. In the next section, we describe data sources and contextual variables. We then present and discuss our results, before formulating concluding remarks.

Data and Methods

Data stem from the *WageIndicator Survey of Living and Working in Coronavirus Times* 2020 (LWCV)[1]. The multilingual LWCV was launched on March 23th 2020 and was made accessible through the frequently visited national WageIndicator websites in 143 countries (WageIndicator Foundation 2020). The survey has been promoted via social media, press releases, snowballing, messages in widely distributed newsletters, and websites of partners. The survey will continue as long as the pandemic lasts. The collected data is updated on a daily basis and shared with the research community through the data archive of the IZA - Institute of Labor Economics[2]. The survey questions and variables that we use in this paper are summarized in Table 1.

Data used in this paper was collected between March 23th and April 30th. In the estimation sample we include 25 countries with at least 20 valid observations. The final sample includes 2,565 observations; the list of countries with the number of valid observations collected in each calendar week since the launch of survey is presented in Table 2.

The LWCV survey takes 5-10 minutes to reply and the questionnaire is designed to tackle the individual, family, and interpersonal coping with the COVID-19 situation. Table 3 describes the data. The sample includes 58% women, the average age of respondents is 40 years and 20% of the sample is older than 50 years. Two-thirds of respondents have tertiary education. Almost half of people (44%) is living with one or more children, 61% is living with a partner and 13% is living alone. The majority of respondents (86%) has a paid job and most of them report that changes in their working routines during the pandemic. 37% report that their workload has decreased and 23% report their workload has increased. These shares are very similar across educational levels. Most respondents (79%) report a good or very good general health though many respondents refer to some symptoms. Almost 15% have suffered from fever, coughing or difficulties in breathing; 28% agree (on a five-point scale) they have felt lonely and 27% have felt depression or anxiety. 15% report to have a family member or a friend tested positive, and 6% report to have a colleague tested positive.

In the survey we identify two indicators to measure individual well-being and mental health problems. First, we measure anxiety by asking respondents 'Have you recently suffered from depression or anxiety' (M =0.27; SD = 0.44). Second, we use a life satisfaction question[3] and reverse

[1] The survey organizer, WageIndicator Foundation, has more than 20 years of experience in developing infrastructure to operate web surveys globally (Kurekova et al. 2015; Tijdens 2020). The mission of WageIndicator is to collect and share information on national labor markets, and labor law data. In 2019 its national websites attracted 47 million web visitors in total. It runs several continuous, global surveys to collect wage data, and price data on food and services. Data obtained from WageIndicator web surveys are used to study job insecurity (Muñoz de Bustillo and Pedraza 2010), life satisfaction (Guzi and Pedraza 2015; Guzi et al. 2020), living costs (Guzi and Kahanec 2019), skill mismatch (Tijdens et al. 2018) among others.

[2] https://datasets.iza.org/covid-19

[3] The question asked is "All things considered, how satisfied are you with your life in general at present? (1 = very dissatisfied, 10 = very satisfied)"

Table 1. Definition of variables and the survey questions

Female	What is your gender? [F/M]
Age	When were you born? - calendar year
Tertiary education	What is the highest level of education you have attained?
Health status	How would you rate your overall health at present? [1=Very good, 5=Very bad]
Lives alone	How many people live in your household? [1-I live alone - 6 or more]
Lives with one or more children	Lives in household with one or more children [Y/N]
Lives with partner	Lives in household with Spouse / partner [Y/N]
Has a dog in the household	Do you care for dogs? [Y/N]
Has a paid job	Do you have a paid job? [Y/N]
Lower income due to COVID-19	What do you expect will happen with regard to your work in the next month? I will receive less income [Y/N]
The workload has increased	How is your work affected? The workload has increased [Y/N]
The workload has decreased	How is your work affected? The workload has decreased [Y/N]
Gets enough daily exercise	Your opinion about the corona crisis - I get enough daily exercise [Y/N]
I feel lonely in times of the corona crisis	Your opinion about the corona crisis - I feel lonely [Y/N]
Self-diagnosed fever/coughing or diff. breathing	Have you recently suffered from … a fever, coughing or difficulties breathing [Y/N]
Self-diagnosed diarrhea	Have you recently suffered from … diarrhea [Y/N]
Has family or friends diagnosed with COVID-19	Have any of your family or friends been diagnosed with the corona virus? [Y/N]
Has colleagues diagnosed with COVID-19	Have any of your colleagues at work been diagnosed with the corona virus? [Y/N]

the 10-point scale to measure dissatisfaction (M =4.54; SD = 2.24). In this way both our indicators point in the same directions with higher values identifying human suffering.

The LWCV collects data continuously so that for each country we can merge the sample with other data sources at a daily base. First, we add the cumulative number of confirmed COVID-19 cases collected by the World Health Organization (WHO).[4] Second, we add data from the ACAPS Government Measures Dataset[5] that systematically monitors measures adopted by governments in response to the Coronavirus pandemic. In the analysis we can only test policies for which we observe data before and after the government policy implementation (For example, the LWCV survey started when in most countries schools were already closed; thus, we cannot test the impact of school closures). We test the adoption of government measures in these areas: mobility restrictions, requirements to wear protective gear in public, and the declared national emergency measures. Table 4 shows the dates these measures have been adopted in the countries under study. Many countries adopted measures already before the launch of LWCV on March 23, though some countries did not yet adopt any measures in the period at stake, or adopted these much later but before April 30. This creates the variation to explore how government policies have impacted on dissatisfaction and anxiety.

Table 2. Country observations by calendar week

Country\Week	13	14	15	16	17	18	Total
Argentina	2	65	0	1	2	5	75
Austria	1	0	1	0	1	18	21
Belgium	1	2	6	3	17	25	54
Bosnia and Herzegovina	0	0	0	12	64	3	79
Brazil	0	7	0	0	12	35	54
Czech Republic	0	7	87	3	56	19	172
Ethiopia	0	34	3	0	0	0	37
France	3	4	6	0	5	6	24
Germany	1	6	14	18	37	28	104
Hungary	41	8	5	0	0	1	55
India	8	10	0	5	5	2	30
Indonesia	0	10	24	1	37	13	85
Ireland	1	2	0	1	9	12	25
Italy	37	39	6	0	7	8	97
Mexico	0	34	6	0	1	0	41
Mozambique	1	2	0	0	16	19	38
Netherlands	52	32	12	15	30	99	240
Pakistan	9	18	2	1	0	1	31
Portugal	1	2	2	1	16	15	37
Slovakia	0	42	114	69	2	1	228
South Africa	9	9	0	12	26	52	108

[4] https://covid19.who.int/

[5] https://data.humdata.org/dataset/acaps-covid19-government-measures-dataset

Spain	8	99	170	78	24	4	383
Turkey	0	0	1	137	70	6	214
United Kingdom	4	5	1	0	4	6	20
Vietnam	2	8	4	1	60	238	313
Total	181	445	464	358	501	616	2565

Source: WageIndicator Survey of Living and Working in Coronavirus Times 2020
Note: Shown are the number of valid observations collected in a given calendar week.

Table 3. Descriptive characteristics

	Mean	SD	Min	Max
Dissatisfaction with life	4.54	2.24	1	10
Feelings of anxiety	0.27	0.44	0	1
Female	0.58	0.49	0	1
Age	39.68	12.14	16	83
Tertiary education	0.64	0.48	0	1
Health status (1=Very good, 5=Very bad)	1.99	0.73	1	5
Lives alone	0.13	0.34	0	1
Lives with one or more children	0.44	0.50	0	1
Lives with partner	0.61	0.49	0	1
Has a dog in the household	0.23	0.42	0	1
Has a paid job	0.86	0.34	0	1
Lower income due to COVID-19	0.27	0.44	0	1
The workload has increased	0.23	0.42	0	1
The workload has decreased	0.37	0.48	0	1
Gets enough daily exercise	2.79	1.37	1	5
Feels lonely in corona times	2.61	1.31	1	5
Self-diagnoses fever, coughing or difficulties breathing	0.14	0.35	0	1
Selfdiagnosed diarrhea	0.13	0.34	0	1
Has family or friends diagnosed with COVID-19	0.15	0.36	0	1
Has colleagues diagnosed with COVID-19	0.06	0.24	0	1
Country: Confirmed cases per 1000	1.05	1.23	0	4.55
Country: Domestic travel restrictions	0.40	0.49	0	1
Country: Requirement to wear protective gear in public	0.36	0.48	0	1
Country: State of emergency declared	0.58	0.49	0	1

Source: WageIndicator Survey of Living and Working in Coronavirus Times 2020, World Health Organization, ACAPS COVID-19: Government Measures Dataset

Table 4. Adoption date of government measures

	Domestic travel restrictions	Requirement to wear protective gear in public	State of emergency declared
Argentina	21-Mar	01-Apr	21-Mar
Austria	23-Mar	01-Apr	
Belgium	21-Mar	05-May	
Bosnia and Herzegovina	10-Apr		21-Mar
Brazil	09-Apr		
Czech Republic		21-Mar	21-Mar
Ethiopia	18-Apr		27-Mar
France	09-Apr		25-Mar
Germany		23-Apr	21-Mar
Hungary		28-Apr	21-Mar
India			
Indonesia			
Ireland	29-Mar		
Italy			21-Mar
Mexico			31-Mar
Mozambique	02-Apr	09-Apr	02-Apr
Netherlands			
Pakistan			
Portugal	10-Apr	17-Apr	21-Mar
Slovakia	09-Apr	21-Mar	21-Mar
South Africa			21-Mar
Spain			21-Mar
Turkey	30-Mar		
United Kingdom			
Vietnam	17-Apr	21-Mar	

Note: Empty cell indicates that the measure was not adopted by government
Source: ACAPS COVID-19: Government Measures Dataset

Results

We estimate OLS models with two different indicators of human suffering as dependent variables.[6] These are the life dissatisfaction variable (obtained by reversing the scale of the life satisfaction question) and the indicator referring to the feelings of anxiety and depression (a dummy variable). Reversing the satisfaction scale facilitates the comparison of findings with feelings of anxiety. The set of explanatory variables at individual level includes age (in years), educational level (a dummy for tertiary education), general health status (1=very good, 5=very bad), household composition (shared living with children, with a partner or with other persons), the presence of a pet, and employment status (a dummy for a paid job). The survey includes questions directly related to COVID-19 conditions: decrease in income, increase or decrease of workload, daily exercising, feelings of loneliness, self-diagnosed symptoms, and having family or friends tested positive on the virus. The set of country-level variables includes the linear and quadratic of the cumulative number of confirmed cases per 1,000 of the population and the dummy variables indicating whether the government measure in question is adopted on a given day. The models include country-fixed effects while errors are clustered on country level. The reported coefficient of determination (R squared) at around 0.2 is typical in models estimating life satisfaction.

The main results are presented in Table 5 whereas average marginal effects are also reported in Figures 1 and 2. The positive coefficients should be interpreted as to increase the negative feelings. We find that individuals with better general health, with a paid job, daily exercising, and avoiding loneliness report less dissatisfaction and less anxiety. Anxiety does not depend on education but dissatisfaction is lower among individuals with tertiary education. Women report feelings of anxiety more often than men. Living with a partner helps to reduce dissatisfaction but has no impact on anxiety. The presence of children or a pet in the household has no effect.

The U-shaped relationship between ageing and subjective well-being is well documented in the literature and holds worldwide with individual satisfaction scores (ceteris paribus) reaching a minimum level between 40 and 60 (Blanchflower 2020; Graham and Pozuelo 2017). Our outcomes confirm this result (see Figure 3, where we reversed the satisfaction scale). The maximum dissatisfaction and anxiety levels are attained at age 38 and 33 respectively.[7] Yet individuals age 50 and over, representing more than 20% of the sample, report lower dissatisfaction: remarkable in view of the fact that in the current pandemic the older population is among the most vulnerable.

The COVID-19 pandemic has influenced the working lives of individuals (Béland et al. 2020; ILO 2020). We find that changes in working routines put many under strain. People feel anxious and dissatisfied either when their workloads decrease or increase. A decrease in workload during the pandemic may signal a higher job insecurity and workers may fear losing their jobs. Higher job insecurity due to COVID-19 is also documented by Baert et al. (2020). In contrast, an increase in workload may relate to higher work-related stress due to the coronavirus conditions. Both circumstances lead to increases in dissatisfaction and anxiety. Similarly, individuals with reduced income due to COVID-19 report higher

[6] We present results from OLS estimations but checked that these results are quantitatively identical to estimations obtained from ordered logit (for dissatisfaction) and logit (for anxiety) models. Results are available from the authors upon request.

[7] When we estimate models only controlling for gender, education, marital and labor force status, and country-fixed effects as in Blanchflower (2020) the maximum dissatisfaction level is attained at age 40.

dissatisfaction and anxiety. Income reduction affects economic security and creates psychological problems.

Feelings of loneliness lead to more dissatisfaction and anxiety. Self-diagnosed symptoms including fever, coughing, and difficulties in breathing are reported by 14% of respondents but do not affect dissatisfaction or anxiety. The symptoms of diarrhoea are to be typically related to higher stress levels but also the anxiety-producing events can lead to digestive problems and trigger diarrhoea (Chan et al. 2017). In general diarrhoea adds to existing anxiety and other mood symptoms.[8] Additionally we find that having relatives or friends tested with COVID-19 generates both anxiety and dissatisfaction.

Our sample includes fifth of respondents who have close relatives or colleagues diagnosed with COVID-19 but our results show that people are nevertheless sensitive to the scale of the pandemic and its consequences. The rapid spread of COVID-19 presented in the media by the growing number of confirmed cases may have intensify fears. We find that a growing number of cases increases dissatisfaction and anxiety (see Figure 4). This effect levels off at around two confirmed cases per 1,000, probably showing an adaptation to higher numbers of cases.

As the COVID-19 pandemic expanded, national governments reacted with a wide range of measures. We find that these steps to manage the coronavirus outbreak have increased human suffering. The restrictions on mobility and requirements to wear protective gear in public increase dissatisfaction and that the state-declared emergency increase feelings of anxiety. Other studies obtain similar findings. Greyling and Rossouw (2020)[9] use Twitter data for South Africa, Australia and New Zealand and identify similar patterns. By analysing data before and after state-imposed lockdowns, Brodeur et al. (2020) find a significant increase of Google searches for keywords such as loneliness, worry and sadness, and fewer searches for keywords such as sleep, stress, suicide and divorce. Haiyang et al. (2020) show that in China the pandemic control measures have reduced depression because of its assumed role in reducing the risk of infection.

[8] The outbreak of COVID-19 in many countries was accompanied by people hoarding toilet paper, food and other supplies. Psychologically the stocking up can help people to feel they are better prepared for the situation and it is less likely that higher demand for toilet paper was driven by the higher prevalence of diarrhea in the epidemic.

[9] www.gnh.today

Table 5. The OLS estimates (dependent variable: dissatisfaction, anxiety)

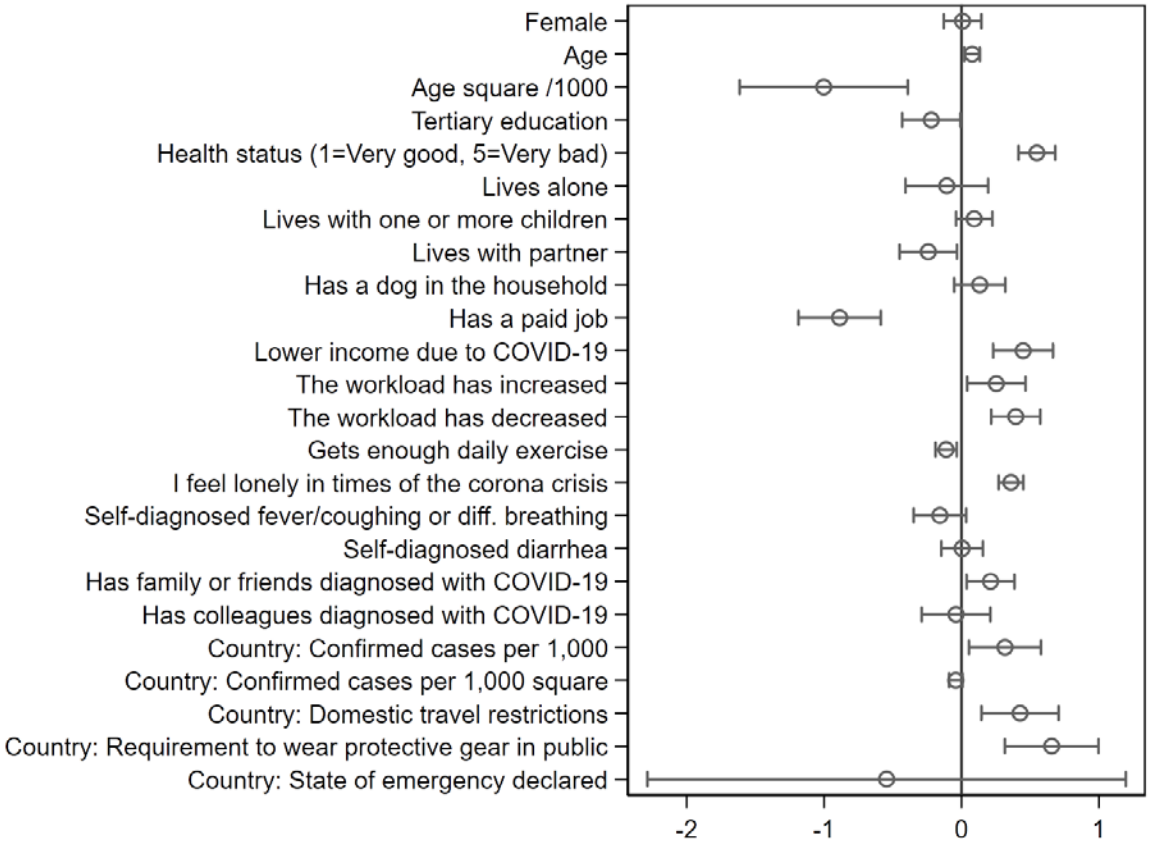
	Disatisfaction		Anxiety	
	Coeff.	s.e.	Coeff.	s.e.
Female	0.01	0.08	0.09***	0.02
Age	0.08**	0.03	0.01**	0.01
Age square /1000	-1.00***	0.36	-0.16***	0.05
Tertiary education	-0.22*	0.12	-0.03	0.03
Health status (1=Very good, 5=Very bad)	0.55***	0.08	0.11***	0.01
Lives alone	-0.11	0.18	-0.02	0.02
Lives with one or more children	0.09	0.08	-0.01	0.02
Lives with partner	-0.24*	0.12	0	0.02
Has a dog in the household	0.13	0.11	0.02	0.02
Has a paid job	-0.89***	0.18	-0.09***	0.02
Lower income due to COVID-19	0.45***	0.13	0.04*	0.02
The workload has increased	0.25*	0.12	0.06**	0.03
The workload has decreased	0.39***	0.1	0.05*	0.02
Gets enough daily exercise	-0.11**	0.05	-0.01**	0.01
I feel lonely in times of the corona crisis	0.36***	0.05	0.07***	0.01
Self-diagnosed fever/coughing/breathing	-0.16	0.11	0.03	0.03
Self-diagnosed diarrhea	0	0.09	0.12***	0.02
Has family or friends diagnosed COVID-19	0.21**	0.1	0.04*	0.02
Has colleagues diagnosed with COVID-19	-0.04	0.15	-0.02	0.03
Country: Confirmed cases per 1,000	0.32**	0.15	0.05	0.04
Country: Confirmed cases per 1,000 square	-0.04	0.03	0	0.01
Country: Domestic travel restrictions	0.43**	0.16	0.04	0.04
Country: Require protective gear in public	0.66***	0.2	0	0.04

Country: State of emergency declared	-0.55	1.02	0.31***	0.04
Constant	0.59	1.34	-0.54***	0.11
N	2565		2565	
r2	0.24		0.19	

Source: WageIndicator Survey of Living and Working in Coronavirus Times 2020, World Health Organization, ACAPS COVID-19: Government Measures Dataset, own calculations

Note: The life dissatisfaction is measured on a 10-point scale (10 = very dissatisfied, 1 = very satisfied). Anxiety is measured by asking respondents 'Have you recently suffered from depression or anxiety'. Estimation uses robust standard errors clustered at country level. *p < 0.1, ** p < 0.05, *** p < 0.01.

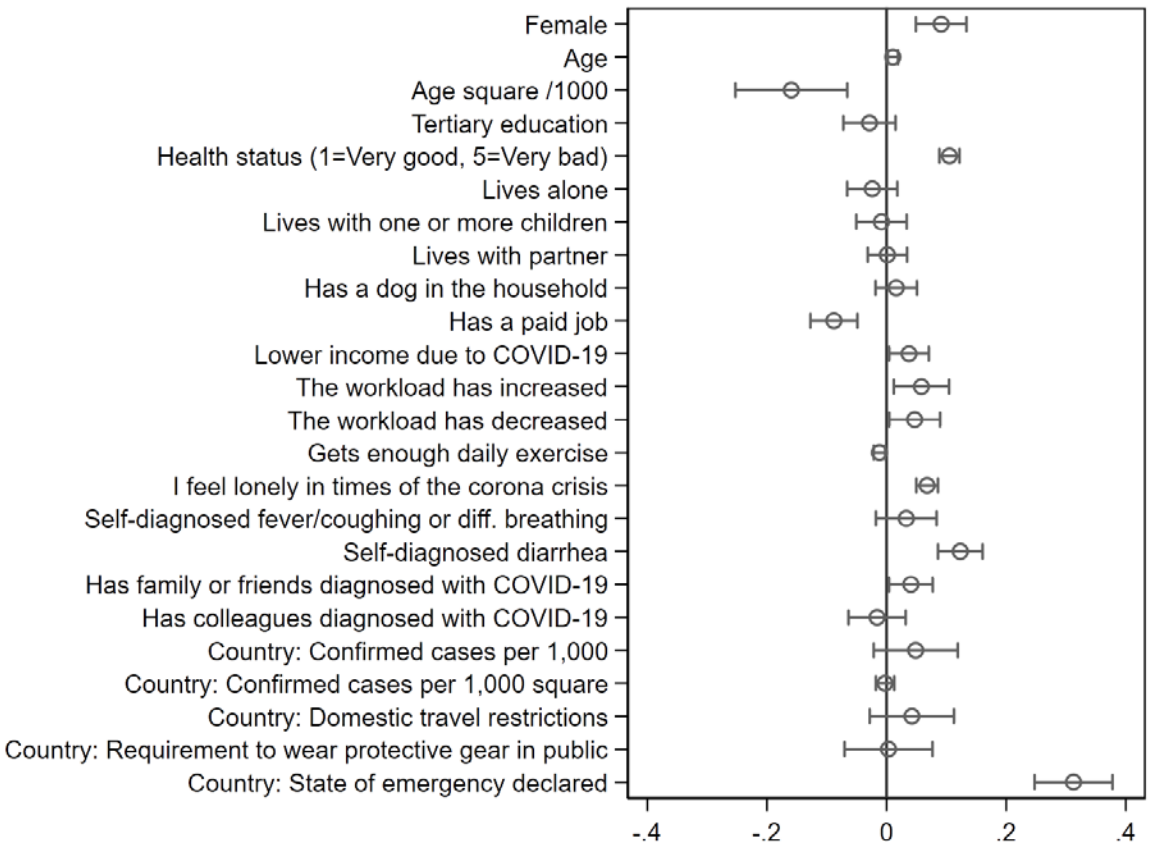
Figure 1 Presentation of marginal effects – dissatisfaction



Source: WageIndicator Survey of Living and Working in Coronavirus Times 2020, World Health Organization, ACAPS COVID-19: Government Measures Dataset, own calculations

Note: Figure reports average marginal effects from model presented in Table 5. Confidence intervals at the 90% level.

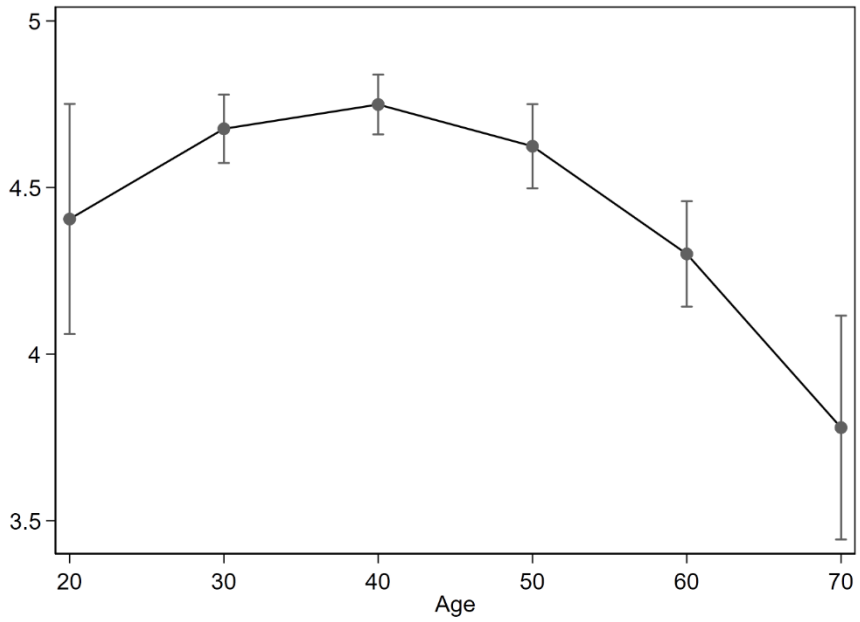
Figure 2. Presentation of marginal effects – anxiety

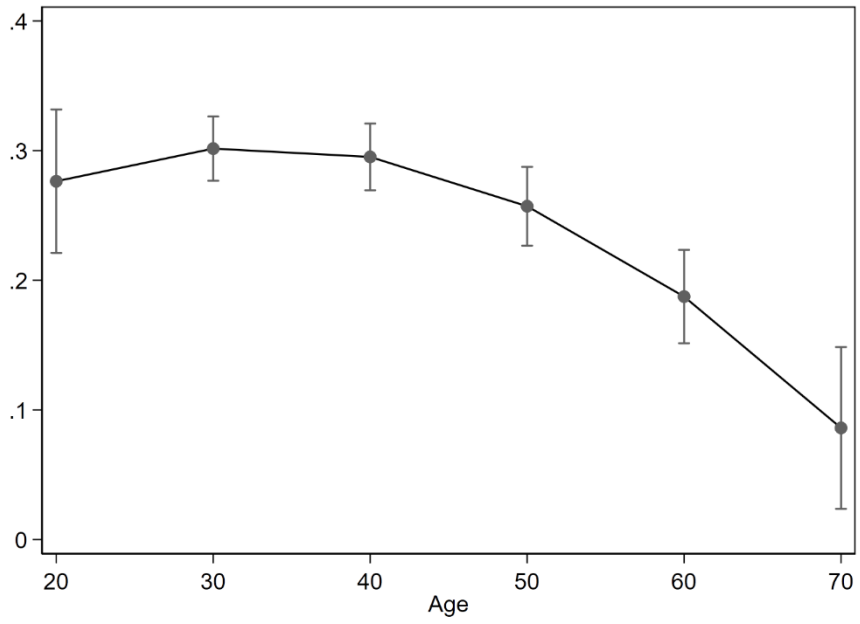


Source: WageIndicator Survey of Living and Working in Coronavirus Times 2020, World Health Organization, ACAPS COVID-19: Government Measures Dataset, own calculations

Note: Figure reports average marginal effects from model presented in Table 5. Confidence intervals at the 90% level.

Figure 3 Predicted life dissatisfaction (top) and anxiety (bottom) as a function of age

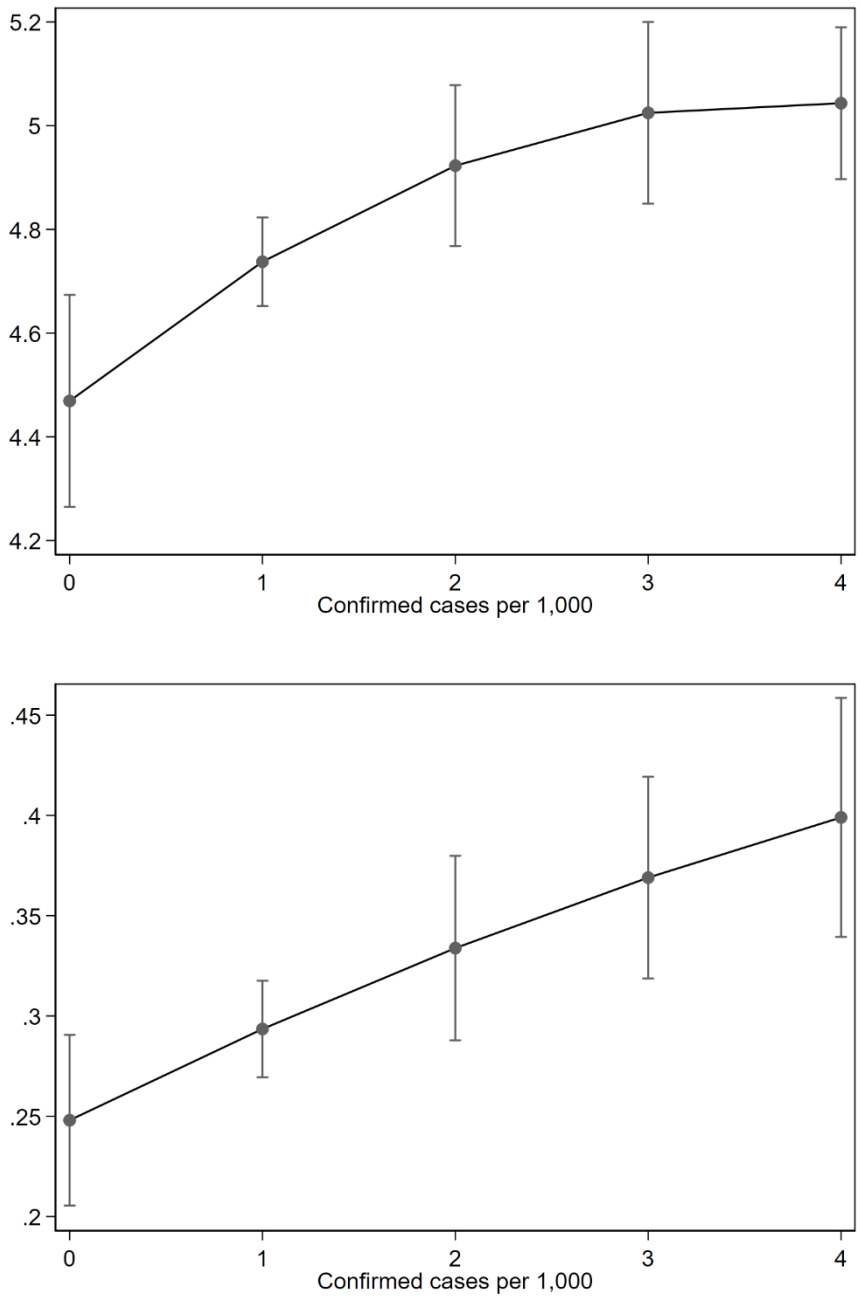




Source: WageIndicator Survey of Living and Working in Coronavirus Times 2020, World Health Organization, ACAPS COVID-19: Government Measures Dataset, own calculations

Note: Predictions are based on estimations in Table 5 and presented are 90% confidence intervals.

Figure 4 Predicted life dissatisfaction (top) and anxiety (bottom) as a function of confirmed COVID-19 cases per 1,000 population



Source: WageIndicator Survey of Living and Working in Coronavirus Times 2020, World Health Organization, ACAPS COVID-19: Government Measures Dataset, own calculations

Note: Predictions are based on estimations in Table 5 and presented are 90% confidence intervals.

Conclusions and Future steps

In this paper we use data collected in March and April 2020 from a web survey (LWCV) in 25 countries to study dissatisfaction and anxiety during the COVID-19 pandemic. Web-surveys are useful data sources to explore and understand this issue. Four research objectives have been explored to explain how individual's life dissatisfaction and anxiety have been affected in the COVID-19 crisis. Firstly, the study shows that a number of personal characteristics impact on an individual's life dissatisfaction and anxiety. Less dissatisfaction and less anxiety has been reported by people with a better general health, with a paid job, daily exercising, and those avoiding loneliness. We confirm earlier research findings that observed an U-shaped relationship between life satisfaction with age. Women report anxiety more often than men, whereas living with a partner reduces dissatisfaction. As regards our second objective we find that that an individual's dissatisfaction and anxiety increases when his/her workload either decreases or increases, when his/her income is reduced, or when he/she reports COVID-19 symptoms. As regards our third objective we could reveal that a growing number of infected cases over time leads to increasing levels of dissatisfaction and anxiety. As regards our fourth objective findings from some other studies could be confirmed namely that the state-imposed COVID-19 measures to restrict mobility and to wear protective gear in public increase dissatisfaction and anxiety. Dissatisfaction reported by LWCV respondents seems to reflect a pattern of week-by-week adaptation. We find that the growing number of confirmed COVID-19 cases increases dissatisfaction and anxiety but that this effect levels off with a higher number of cases.

In conclusion, our results confirm the importance of stability of employment. Maintaining employment on good conditions for as many as possible will cushion the economic fall. Streamlining of aid may prevent the closure of companies and maintain the productive structure of firms and jobs.

As the survey used continues over the coming months, the collected data will allow a further exploration of the effects of the pandemic as well as the governments' responses. Finally we do hope this work will encourage researchers and institutions to use and promote the LWCV survey.

References

Akay, A., Constant, A., Giulietti, C., and Guzi, M. (2017). Ethnic diversity and well-being. *Journal of Population Economics*, 30(1), 265-306.

Alipour J.V., Falck, O., and Schüller, S. (2020) Germany's Capacities to Work from Home, *IZA DP* No. 13152, APRIL 2020

Baert, S., Moens, E., Sterkens, P., Weytjens, J., and Sterkens, P. (2020) How Do We Think the COVID-19 Crisis Will Affect Our Careers (If Any Remain)? GLO Discussion Paper, No. 520, Global Labor Organization (GLO), Essen

Béland, L. P., Brodeur, A., & Wright, T. (2020). The Short-Term Economic Consequences of COVID-19: Exposure to Disease, Remote Work and Government Response. GLO Discussion Paper, No. 524, Global Labor Organization (GLO), Essen

Belot, M., Choi, S., Jamison, J.C., Papageorge, N.W., Tripodi, E., van den Broek-Altenburg, E. (2020) Six-Country Survey on Covid-19, *IZA DP* No. 13230, May 2020.

Blanchflower, D. G. (2020) Is Happiness U-shaped Everywhere? Age and Subjective Well-being in 145 Countries GLO Discussion Paper, No. 530, Global Labor Organization (GLO), Essen

Blanchflower, D. G., and Oswald, A. J. (2004) Well-being over time in Britain and the USA. *Journal of public economics* 88(7-8), 1359-1386.

Brodeur, A., Clark, A., Fleche, S. and Powdthavee, N. (2020), Assessing the Impact of the Coronavirus Lockdown on Unhappiness, Loneliness, and Boredom using Google Trends. mimeo University of Ottawa.

Chan, W., Shim, H. H., Lim, M. S., Sawadjaan, F. L. B., Isaac, S. P., Chuah, S. W., ... and Kong, C. (2017). Symptoms of anxiety and depression are independently associated with inflammatory bowel disease-related disability. *Digestive and Liver Disease*, 49(12), 1314-1319.

Clark, A. E., and Oswald, A. J. (1994) Unhappiness and unemployment. *The Economic Journal* 104 (424), 648-659.

Di Tella, R., MacCulloch, R. J., and Oswald, A. J. (2001). Preferences over inflation and unemployment: Evidence from surveys of happiness. American economic review, 91(1), 335-341.

Fetzer, T., Witte M., Hensel, L., Jachimowicz, J.M. , Haushofer, J., Ivchenko, A., Caria, S. Reutskaja, E., Roth, C., Fiorin, E., Gomez, M., Kraft-Todd, G., Goetz, F., and Yoeli, E. (2020) Global Behaviours and perceptions in the Covid-19 pandemic. *CEPR Discussion Paper* DP14631, April 2020. https://cepr.org/active/publications/discussion_papers/dp.php?dpno=14631#

Graham, C. and Pozuelo, J.R. (2017). Happiness, stress, and age: how the U curve varies across people and places, *Journal of Population Economics*, 30(1), 225-264.

Greyling, T. and Rossouw, S. **(**2020). Gross National Happiness Project, **www.gnh.today** COVID-19 Lockdown plays havoc with emotions and "Happiness Index" stays under pressure**.** Global Labour Organization news https://glabor.org/covid-19-lockdown-plays-havoc-with-emotions-and-happiness-index-stays-under-pressure-in-south-africa/

Frijters, P, Clark, A., Krekel, C., Layard, R. (2020). A happy choice: Well-being as the goal for government. *Behavioral Public Policy* DOI: https://doi.org/10.1017/bpp.2019.39

Guzi, M. and Pedraza P. de (2015). A Web Survey analysis of Subjective Well-Being, *International Journal of Manpower* 36(1), 48-67.

Guzi M, Kahanec M (2019) Country Reports Living Wages - Annex to Living Wages Globally, WageIndicator Foundation, Amsterdam.

Haiyang, L., Peng, N. Long, Q. (2020) Working Paper Do Quarantine Experiences and Attitudes Towards COVID-19 Affect the Distribution of Psychological Outcomes in China? A Quantile Regression Analysis. *GLO Discussion Paper*, No. 512

ILO (2020). ILO Monitor 2nd edition: COVID-19 and the world of work. Geneva: International Labor Office.

Kureková, L.M., Beblavý, M. & Thum-Thysen, A. (2015) Using online vacancies and web surveys to analyse the labour market: a methodological inquiry. *IZA J Labor Econ* 4, 18.

Lucas, R.E. & Donnellan, M.B. (2007). How stable is happiness? Using the STARTS model to estimate the stability of life satisfaction. *Journal of Research in Personality* 41 (2007) 1091–1098.

Muñoz de Bustillo, R., and Pedraza, P. de (2010). Determinants of job insecurity in five European countries. *European Journal of Industrial Relations*, 16(1), 5-20.

Pedraza, P. de, Tijdens, K.G., and Muñoz de Bustillo, R. (2010). A Spanish Continuous Volunteer Web Survey: Sample Bias, Weighting and Efficiency. *Revista Espanola De Investigaciones Sociologicas*, (131), pp.109–130.

Pedraza, P. de, Guzi, M., Tijdens, K. (2020) Life satisfaction of employees, labour-market tightness and matching efficiency. *IZA DP* No. 12961. Forthcoming at International Journal of Manpower.

Tijdens, K., Beblavý, M., & Thum-Thysen, A. (2018). Skill mismatch comparing educational requirements vs attainments by occupation. International Journal of Manpower. 39(8), 996-1009.

Tijdens, K.G. (2020). Managing surveys: ten lessons learned from web-surveys. Amsterdam, WageIndicator Foundation, https://wageindicator.org/documents/publicationslist/publications-2020/ten-lessons-learned-from-web-surveys_20200411.pdf

Tourangeau, R., Conrad, F. G., & Couper, M. P. (2013). The science of web surveys. Oxford University Press.

List of abbreviations and definitions

LWCV	Living and Working in Corona Virus Survey

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