Alcohol consumption during the COVID-19 pandemic in Europe: a large-scale cross-sectional study in 21 countries

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Abstract

Aims: The aim of this project was to investigate changes in alcohol consumption during the first months of the pandemic in Europe as well as its associations with income and experiences of distress related to the COVID-19 pandemic.

Design: Cross-sectional online survey conducted between April 24 and July 22 of 2020.

Setting: 21 European countries.

Participants: 31,964 adults reporting past-year drinking.

Measurements: Changes in alcohol consumption were measured by asking respondents about changes during the previous month in their drinking frequency, the quantity they consumed, and incidence of heavy episodic drinking events. Individual indicators were combined into an aggregated consumption-change score and scaled to a possible range: -1 to +1. Using this score as outcome, multilevel linear regressions tested changes in overall drinking, taking into account sampling weights and baseline alcohol consumption (AUDIT-C) and country of residence serving as random intercept. Similar models were conducted for each single consumption-change indicator.

Findings: In almost all countries, the consumption-change score indicated alcohol use to decrease on average; except in Ireland and the UK, where alcohol consumption on average remained unchanged or increased, respectively. Decreases in drinking were mostly driven by a reduced frequency of heavy episodic drinking. Declines in consumption were less marked among those with low- or average incomes, and those experiencing distress.

Conclusions: Our research suggests alcohol consumption to decline on average during the first months of the pandemic in Europe. The findings suggest both reduced availability of alcohol and increased distress may have affected alcohol consumption, although the former seemed to have a greater impact, at least in terms of immediate effects. Monitoring of mid- and long-term consequences will be crucial in understanding how this public health crisis impacts alcohol consumption.

Introduction

Since early 2020, global populations have experienced the rapid spread of the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2, henceforth: COVID-19 pandemic), leading to more than 200,000 deaths in Europe within the first six months of 2020 alone [1]. Numerous measures have been adopted to respond to the spread of the disease, with the European population subjected to varying levels of local or national lockdown, including border closures across countries inside and outside the Schengen Area [2]. These measures have had unprecedented impacts on private and public life, and continue to affect population health and well-being worldwide [3, 4]. Alcohol use has been identified as an important risk factor for poor physical and mental health [5] and is prone to change in stressful times, such as the current COVID-19 pandemic.

As well as being a possible unintended outcome of the COVID-19 pandemic and its related political measures, changes in alcohol consumption are also likely to affect the general health status of individuals and the course and prognosis of the COVID-19 disease [3, 6–8]. However, to date, population-based research on the impact of alcohol consumption has been scarce, and generally focused on individual countries or specific populations. For example, studies from France, Germany, and the United Kingdom (UK) on alcohol use during the COVID-19 pandemic suggest that more individuals have increased their drinking than have decreased it, particularly those who are frequent and heavy drinkers [9–11]. As potential mechanism, an elevated exposure to stress during the COVID-19 pandemic leading to an increase in alcohol consumption is under debate. Alcohol use is considered a maladaptive coping strategy to manage the psychological distress and arises from an interplay of social isolation, insecurity, and financial difficulties [12, 13].

An alternative theory suggests that the reduced number of options to drink alcohol in general, and particularly outside the home (e.g., bars, pubs), due to the closure of outlets and consumption sites, as well as limitations on typical drinking environments related to traveling (e.g., planes, hotels, cruise ships), coupled with growing unemployment and financial insecurity affecting affordability, might in fact have led to *reduced* levels of drinking in global populations [12, 14]. Evidence supporting this *availability-affordability mechanism* can be derived from research examining the impact of alcohol control policies [15] and economic crises [12] on alcohol use. It is particularly relevant since, for the year 2020, the International Monetary Fund foresees a severe economic downturn within the Euro zone [16], and the International Labour Organisation has estimated that the equivalent of 55 million full-time jobs were lost in Europe within the first two quarters of the year [17].

Given that both mechanisms have potentially influenced changes in alcohol consumption in Europe during the pandemic, albeit affecting distinct subpopulations in diverse ways, a more differentiated view of the effects of COVID-19 is needed. Based on indicators for income and distress, we propose the following three hypotheses. First, we expect alcohol consumption to decline on average during the first months of the COVID-19 pandemic in Europe, due to reduced availability and affordability. Second, due to reduced affordability for lower income groups, we hypothesise that people with lower incomes will report a more substantial decline in their drinking than those with higher incomes. Third, patterns of change will depend on the level of distress experienced during the pandemic; specifically, and independently of income levels, people who experience distress will be more likely to increase their alcohol consumption than those who do not.

To test these *a priori* hypotheses [18], we analysed data from a pan-European survey, which included responses from more than 40,000 individuals from 21 European countries.

Methods

This study fully complies with the Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER) statement [19] (see Supplementary Material S1).

Data

Individual-level data were obtained from the cross-sectional online European Alcohol and COVID-19 survey, conducted between April 24 and July 22 of 2020 to gather information on changes in alcohol consumption among European adults (www.COVID19-and-alcohol.eu). The survey was originally developed in English, and then was translated into 20 languages and disseminated in 21 European countries, using different sampling techniques (for details, see [20]). To ensure sufficient representation across gender, age, and educational attainment, a targeted sampling was used in some countries (e.g., via paid ads on social media websites). Details concerning study design and implementation have been published in a separate study protocol [18]. The surveys used fixed standard questions, and researcher-led outcome measures, to ensure comparability across countries and to other studies; however, the public (including patient populations) are very heavily involved in the recruitment and data collection in this study (for details, see study protocol [18]).

Measures

Respondents were asked whether their (i) frequency of drinking occasions, (ii) quantity of alcohol consumed per occasion, or (iii) frequency of heavy episodic drinking (HED) had changed during the past month (i.e., ‘drinking much less (often)’ [-2], ‘drinking slightly less (often)’ [-1], ‘no change [0]’, ‘drinking slightly more (often)’ [+1], ‘drinking much more (often)’ [+2]). The three variables were summed and divided by six in order to obtain an aggregate consumption-change score scaled to a potential range of -1 to +1, with negative values indicating a decrease and positive values indicating an increase in consumption during the past month (relative to the past 12 months [baseline alcohol consumption]). The consumption-change score was treated as a continuous variable (for sensitivity analyses on this assumption, see Supplementary Material S2).

Additionally, respondents were asked for their monthly net household income before the spread of COVID-19, and whether they have experienced financial distress due to changes in their financial or occupational situation or distress due to changes in their everyday life within the past month (for details, see Supplementary Material S3).

Statistical analyses

To adjust the sample to the respective population distributions of each country, data were weighted by gender (women, men, other), age group (18-34, 35-54, ≥55 years) and educational attainment (primary, secondary, higher education) (see Supplementary Material S4).

To test the first hypothesis, a weighted multilevel linear regression model was conducted with the consumption-change score as outcome variable for the entire sample, taking into account population weights and country as random intercept

(Equation 1, where β_0 is the grand mean intercept, β_1 is the regression coefficient for the centred AUDIT-C sum score x_{ij}, β_{0j} is the random intercept and ε_{ij} is the error term for each individual i in country j):

$$\text{Equation 1:} \quad y_{ij} = \beta_0 + \beta_1 x_{ij} + \beta_{0j} + \varepsilon_{ij}$$

In order to evaluate whether the country-specific consumption-change scores significantly differ from 0 and thus indicate average increases or decreases, survey weighted linear regressions for each national subsample were run (similar to Equation 1 but without random intercept). The models were adjusted for baseline alcohol consumption as measured by the Alcohol Use Disorders Identification Test (AUDIT-C) [21] since previous studies have shown changes in drinking levels to vary largely across different groups of drinkers [9, 22]. AUDIT-C sum scores were centred for each country, allowing interpretation of the intercept as the consumption-change score at the median drinking level in each country.

Multilevel linear regressions were performed to test hypotheses 2 and 3, with the consumption-change score serving as the outcome variable and income group (model 1), financial distress (model 2), and distress due to changes in everyday life (model 3) as independent variables. We considered income as an approximation of affordability of alcoholic drinks. An additional model further included the interaction of income group and financial distress (model 4). A detailed description of the statistical analysis is provided in the Supplementary Material S3.

Two sets of sensitivity analyses were conducted: a first set repeating regression models but excluding Norwegian respondents as they constitute almost 50% of the sample; and a second set in which each indicator of the combined consumption-change measure was considered as an individual outcome, i.e. the original ordinal variables drinking frequency, quantity of alcohol consumed per occasion, and the incidence of HED events scaled to a range between -1 and +1.

Stata 15.1 [23] and R 4.0.2 [24] statistical software were used. The study materials (e.g., questionnaires, dissemination strategies by country), survey data and codebooks are publicly available at Figshare [20, 25] and may be used for further research.

Data sharing statement

The dataset supporting the conclusions of this article is available in the Figshare repository, https://doi.org/10.6084/m9.figshare.13580693.v1. Syntax used in the statistical analyses will be made available upon request to the corresponding author.

Results

Complete and valid responses (age: 18 to 98 years, number of household members < 60) were available for 40,064 people, representing 75.2% of those who responded to the survey consent form (completion rate). Out of this sample, we excluded 3,789 respondents due to missing information for key variables: changes in alcohol consumption (422 individuals); income (2,454 individuals); baseline alcohol consumption (608 individuals); and financial distress (305 individuals). These respondents did not differ considerably with respect to age, educational attainment, or AUDIT-C scores compared to the final sample (see Supplementary Material S5). Of the remaining 36,275 respondents, 11.9% (*n* = 4,311) reported having abstained from alcohol within the past year, including the pandemic period, and were thus excluded from the analyses. Our final analytic sample included 31,964 individuals (for a comparison with the actual European population, see Supplementary Material S6).

The number of participants ranged between 349 from Albania to 15,686 from Norway. Information on baseline alcohol consumption, median income, perceived financial distress, and distress due to changes in everyday life by country are presented in Table 1 (for information on sample characteristics, see Supplementary Material S7). On average, one in five individuals reported experiencing substantial or high financial distress related to the COVID-19 pandemic (21.1%, 95% CI: 10.5, 22.8), while more than half of the sample reported distress due to substantial changes in their everyday life (53.8%, 95% CI: 51.7, 55.6).

Table 1. Descriptive statistics by country.

Country	Sample size	Mean AUDIT–C score (95% CI)		Median income*		% Financial distress (95% CI)		% Distress due to changes in everyday life (95% CI)	
		unweighted	weighted	unweighted	weighted	unweighted	weighted	unweighted	weighted
Albania	349	2.8 (2.4 – 3.3)	3.4 (2.6 – 4.3)	124.85 EUR**	125.00 EUR**	52.0 (46.6 – 57.3)	49.8 (40.5 – 59.2)	71.1 (66.0 – 75.7)	65.3 (55.8 – 73.7)
Czechia	1,355	4.2 (4.1 – 4.3)	4.5 (4.3 – 4.8)	16,431.25 CZK	16,650.33 CZK	16.6 (14.7 – 18.7)	16.5 (13.3 – 20.5)	53.7 (51.0 – 56.3)	51.9 (46.9 – 56.9)
Denmark	2,337	4.8 (4.7 – 4.9)	5.0 (4.8 – 5.2)	9,988.20 DKK	9,988.20 DKK	15.2 (13.7 – 16.7)	12.5 (10.1 – 15.3)	42.5 (40.5 – 44.5)	36.6 (33.0 – 40.4)
Finland	3,550	4.3 (4.2 – 4.4)	4.9 (4.7 – 5.0)	1,500.00 EUR	1,500.00 EUR	14.3 (13.2 – 15.5)	15.3 (13.5 – 17.3)	41.2 (39.6 – 42.9)	37.2 (34.8 – 39.7)
France	360	4.3 (4.0 – 4.6)	4.8 (4.3 – 5.3)	1,250.00 EUR	1,000.00 EUR	17.3 (13.7 – 21.6)	19.7 (14.1 – 26.9)	59.5 (54.3 – 64.5)	48.0 (40.7 – 55.3)
Germany	1,513	4.6 (4.4 – 4.7)	4.6 (4.4 – 4.8)	1,250.00 EUR	1,250.00 EUR	14.6 (12.9 – 16.5)	15.2 (13.0 – 17.8)	62.2 (59.7 – 64.7)	60.6 (57.2 – 63.8)
Greece	470	3.6 (3.4 – 3.8)	4.2 (3.7 – 4.7)	666.67 EUR	500.00 EUR	25.3 (21.5 – 29.5)	26.7 (19.5 – 35.3)	54.7 (50.1 – 59.2)	54.9 (46.4 – 63.2)
Hungary	506	3.4 (3.2 – 3.6)	3.4 (3.1 – 3.8)	150,224.55 HUF	133,494.33 HUF	41.6 (37.3 – 46.0)	47.5 (41.6 – 53.5)	72.0 (67.9 – 75.8)	72.1 (66.4 – 77.2)
Iceland	544	3.3 (3.1 – 3.5)	3.8 (3.4 – 4.2)	211,986.14 ISK	198,737.50 ISK	12.4 (9.9 – 15.5)	13.1 (8.8 – 19.0)	40.5 (36.4 – 44.7)	36.7 (29.5 – 44.4)
Ireland	493	4.9 (4.7 – 5.2)	5.6 (4.9 – 6.2)	1,250.00 EUR	1,250.00 EUR	19.4 (16.1 – 23.2)	22.9 (15.5 – 32.5)	77.9 (74.0 – 81.4)	75.7 (66.4 – 83.1)
Italy	841	3.2 (3.0 – 3.4)	3.4 (3.1 – 3.8)	1,166.67 EUR	1,000.00 EUR	17.1 (14.7 – 19.9)	21.7 (17.1 – 27.2)	64.9 (61.6 – 68.1)	57.5 (51.8 – 63.0)
Norway	15,686	4.1 (4.1 – 4.2)	4.5 (4.5 – 4.6)	16,455.52 NOK	18,299.67 NOK	13.0 (12.5 – 13.5)	12.9 (12.1 – 13.7)	49.0 (48.2 – 49.7)	42.3 (41.1 – 43.5)
Poland	1,033	5.1 (4.9 – 5.3)	4.8 (4.5 – 5.1)	3,340.06 PLN	2,674.10 PLN	21.9 (19.5 – 24.5)	26.7 (21.0 – 33.2)	70.5 (67.6 – 73.2)	73.4 (67.1 – 78.8)
Portugal	661	3.1 (3.0 – 3.3)	3.4 (3.1 – 3.7)	750.00 EUR	625.00 EUR	12.0 (9.7 – 14.7)	9.8 (6.5 – 14.6)	64.6 (60.9 – 68.2)	60.1 (52.1 – 67.7)
Russia	693	3.9 (3.7 – 4.2)	4.3 (3.8 – 4.9)	42,510.00 RUB	31,882.50 RUB	18.7 (15.9 – 21.8)	20.6 (14.8 – 27.9)	42.1 (38.4 – 45.8)	40.7 (33.3 – 48.5)
Slovakia	415	3.9 (3.6 – 4.1)	4.1 (3.5 – 4.6)	666.67 EUR	500.00 EUR	13.5 (10.5 – 17.2)	6.8 (4.3 – 10.5)	45.4 (40.6 – 50.3)	33.8 (26.2 – 42.3)
Slovenia	508	3.2 (3.0 – 3.4)	3.9 (3.5 – 4.4)	833.33 EUR	700.00 EUR	15.6 (12.7 – 19.1)	14.8 (9.8 – 21.6)	49.5 (45.1 – 53.9)	38.7 (31.2 – 46.9)
Spain	2,840	3.9 (3.8 – 4.0)	4.1 (3.9 – 4.3)	1,000.00 EUR	875.00 EUR	27.8 (26.1 – 29.5)	32.2 (29.2 –	74.8 (73.1 – 76.4)	72.9 (69.7 –

							35.5)		75.9)
Sweden	777	3.3 (3.1 – 3.4)	3.7 (3.3 – 4.1)	25,029.00 SEK	22,526.10 SEK	15.1 (12.7 – 17.8)	18.2 (12.8 – 25.2)	48.8 (45.3 – 52.4)	39.6 (32.9 – 46.6)
Ukraine	438	3.5 (3.2 – 3.7)	3.4 (2.9 – 3.8)	7,296.75 UAH	7,296.75 UAH	29.6 (25.5 – 34.2)	26.4 (18.8 – 35.6)	46.9 (42.2 – 51.7)	41.7 (32.6 – 51.4)
United Kingdom	836	6.2 (6.0 – 6.4)	7.2 (6.8 – 7.6)	1,241.33 GBP	1,240.65 GBP	17.3 (14.8 – 20.0)	22.8 (17.7 – 28.8)	69.6 (66.4 – 72.7)	64.3 (58.3 – 70.0)
TOTAL	31,964	4.2 (4.2 – 4.2)	4.5 (4.4 – 4.7)	1,287.50 EUR***	1,287.50 EUR***	16.3 (15.9 – 16.7)	21.1 (19.5 – 22.8)	53.2 (52.7 – 53.8)	53.7 (51.7 – 55.6)

Note: CI = Confidence Interval, SD = Standard deviation. AUDIT-C Score ranged between 1 – 12 (past-year abstainers AUDIT-C Score = 0 were excluded from the sample). * Income was weighted for the number of household members. ** Income categories were provided in EUR. *** Currencies other than the EUR were converted into EUR (based on exchange rate of 30 July 2020)

Hypothesis 1: Overall change in alcohol consumption

Across all countries, the consumption-change score indicated an average decrease of 0.14 (95% CI: -0.18, -0.10; $p < .001$). The average consumption-change score ranged between −0.37 (95% CI: -0.52, -0.22; $p < .001$) in Albania to +0.10 (95% CI: 0.03, 0.17; $p = .004$) in the UK. Country-specific mean changes in the consumption-change score and the distribution of the aggregate change indicators are presented in Figure 1. Of all the countries examined in our project, only the UK reported a significant mean increase in alcohol consumption. In Ireland, no significant change was reported. The breakdown of the aggregated change indicator provides further insights into the impact of individual response options on the overall consumption-change score, while a greater deviation from 0 indicates a larger change. In other words, participants whose score indicates an increase or decrease at level 6 have reported a substantial increase or decrease in all three indicator variables, respectively. Levels in between (increase or decrease levels 1 to 5) reflect a combination of slight or substantial changes in these indicator variables. With regard to overall consumption change, almost half of the respondents with a negative consumption-change score (decrease level 1 to 6) reported to have substantially reduced their consumption (5,967 of 12,709 respondents with decrease level ≥ 3). This in contrast to drinkers with a positive consumption-change score (increase level 1 to 6), who seldomly reported substantial increases (22% or 1,568 of 7,240 respondents with increase level ≥ 3).

In-depth analyses of the individual indicators of change revealed that drinking frequency did not change significantly in seven countries (Denmark, France, Germany, Ireland, Poland, Slovenia, Ukraine), while quantities of alcohol consumed remained the same in only two countries (Germany, Ireland). The frequency of HED events was reported as decreasing in almost all countries except for the UK, where, on average, frequency of HED occasions neither increased nor decreased (for details, see Supplementary Material S8).

Hypothesis 2: Changes in alcohol consumption by income group

Results of the multilevel regressions presented in Table 2 show that the consumption-change score was substantially higher among respondents with low or average incomes compared to those with high incomes. This means that respondents with high incomes were more likely to report a decline in alcohol consumption while those with low or average incomes were less likely to do so, or, in other words, respondents with high incomes reported the most pronounced decline in alcohol consumption. However, in the sensitivity analysis excluding Norwegian respondents, the consumption-change score did not significantly differ between respondents with low compared to those with high incomes ($p = .253$; see Supplementary Material S9).

Table 2. Results of multilevel linear regressions of changes in overall alcohol consumption (outcome).

	Coef.	95% Confidence interval	*p*-value
Model 1: Income group (reference: high income)			
Low income	0.03	0.01 – 0.05	.009
Average income	0.05	0.04 – 0.07	< .001
Model 2: Financial distress (reference: no financial distress)			
Substantial financial distress	0.06	0.05 – 0.07	< .001
Model 3: Distress due to changes in daily life (reference: no distress)			
Substantial distress	0.03	0.02 – 0.04	< .001

Notes. Consumption-change score (outcome) ranged between -1 to +1, with values higher than 0 indicating an increase in consumption and values lower than 0 indicating a reduction. Model 1 was adjusted for sex, age, education, baseline alcohol consumption and week of survey response; Model 2, 3 were adjusted for sex, age, educational attainment, baseline alcohol consumption, income group and week of survey response. Random intercept: country. Sample sizes: Models 1, 2: 31,964; Model 3: 31,943 (< 0.01% missing values).

Hypothesis 3: Changes in alcohol consumption by experienced distress

Reports of both financial distress and distress due to changes in everyday life were associated with a significant less pronounced decrease in the consumption-change score (see Table 2). This effect was higher for financial distress compared to distress due to changes in everyday life, and excluding Norwegian respondents did not substantially alter the results (see Supplementary Material S10).

Analysing the interaction of experiencing financial distress and income group revealed that the association between financial distress and the consumption-change score was driven by people with high income. As shown in Figure 2, reductions in alcohol consumption during the pandemic were most pronounced among individuals with high incomes experiencing no financial distress (-0.18, 95% CI: -0.20, -0.15) compared to low- and average income groups without such distress experiences. In contrast, among those experiencing financial distress, individuals with high incomes reported a substantially smaller decline in their consumption compared to their counterparts with low- and average income and financial distress.

Discussion

Our findings indicate that drinkers who took part in our survey on average reduced their alcohol consumption during the first months of the COVID-19 pandemic in Europe, except for Ireland and the UK. While the average consumption remained unchanged in Ireland, drinking frequencies and quantities consumed per occasion increased considerably in the UK, but not the frequency of HED events. Decreases in the overall alcohol consumption were mostly driven by a decline in the frequency of HED events. Changes in consumption were associated with income and experiences of distress: For drinkers with low income, alcohol use generally declined, regardless of any experienced financial distress. However, for those with average or high incomes, changes in alcohol use were dependent on such distress experiences.

Strengths and limitations

We launched the European Alcohol and COVID-19 Survey in response to the extraordinary situation created globally by the COVID-19 pandemic reaching Europe in early 2020. Due to the collaborative efforts of alcohol researchers across Europe and by using different sampling techniques [20], it was possible to reach more than 30,000 drinkers within a short period.

The project data constitute a convenience sample of more than 30,000 individuals across Europe, which is in many ways comparable to samples from other general population alcohol surveys (see Supplementary Material S6). Compared to national population estimates, women, younger adults, those with higher educational attainment, and individuals on higher incomes were overrepresented in our sample. This is similar to the composition of other European population-based COVID-19 surveys [9, 11, 26], meaning that particularly vulnerable subpopulations for this situation, such as the elderly, may not be sufficiently represented in our sample. Of note, however, is

that we successfully included a substantial proportion of heavy drinkers in our sample – a group often poorly covered in other general population surveys [27, 28].

Interpretation of findings

Our findings support our *a priori* hypothesis that alcohol consumption will decline in the first months of the COVID-19 pandemic, suggesting a greater impact of the availability-affordability mechanism than the distress mechanism, at least for Europe [14]. However, the impact of reduced affordability on alcohol consumption as a consequence of the pandemic (hypothesis 2) can only be partly supported by our results, as drinkers with high incomes were most likely to report declines in their consumption, which stands in contrast to the assumption that these drinkers would be less affected by reduced affordability during the pandemic. Thus, reduced availability may have been a more important determinant.

The limited impact of affordability on drinking behaviour could be due to (i) largely constant or slightly declining alcohol prices in the first half of 2020 [33], and (ii) the fact that irrespective of income, at the start of pandemic, most European populations might have been similarly affected by this public health crisis,, including, but not limited to, stay-at-home policies and border closures. In this respect, a health crisis such as the ongoing COVID-19 pandemic may differ from purely economic crises, at least for a predominantly high-income region such as Europe. There might be other factors important for the observed decline in alcohol consumption, related to availability: First, during the lockdown, which was imposed at least temporarily, completely or partially, in all countries, on-premise consumption sites such as restaurants, bars, and pubs were largely closed, which has presumably led to a reduced availability of alcohol. While off-premise consumption could be largely unaffected, as grocery and state monopoly stores were mostly open, restrictions in movement and groups strongly advised not to go out, limited purchase closures. However, and probably more important, was the restriction of social gatherings such as family celebrations, concerts, or parties, which are often accompanied by heavy drinking. This rational is supported by our finding of a considerable decline in the HED frequency in all countries, except for the UK.

Given this general picture, the increase in alcohol consumption in the UK and the largely unchanged consumption in Ireland seem to be an alarming anomaly, with the UK findings being consistent with those of Alcohol Change UK [34] and by analyses of routinely collected data of household purchases [35]. The latter study also identified that the increases of alcohol purchases were driven by high-income households, which warrants future investigation.

One possible explanation for the diverging patterns in Ireland and the UK could be an interaction between particularly high levels of distress related to COVID-19 in these countries, and a wider adoption of alcohol as a coping strategy in the general population. It is also noticeable that both countries are among those in which the average AUDIT-C score well exceeded the overall mean, indicating an oversampling of heavier drinkers. However, comparisons of the AUDIT-C responses in the Irish sample with the results of an Irish general population survey found this oversampling to be below 5% (see Supplementary Material S6). The increase in alcohol consumption in the UK could relate to a combination of the pressure on the national health system resulting from the severity of the COVID-19 pandemic with changes in the accessibility and availability of support services [36]. It is worth mentioning that the UK seems to be the only European country, where liquor stores were added to the list of “essential” businesses allowed to remain open during the early stages of lockdown, along with pharmacies and supermarkets, with alcohol deemed to be an “essential” good during the crisis, and ensuring that it remained available [37]. A loosening of alcohol policies by allowing home delivery and online purchases of alcohol might have increased at-home drinking, at least in the first months of the pandemic [38]. However, more in-depth research on alcohol use during the COVID-19 pandemic in the UK as well as across countries is needed.

In line with previous findings, we found further support that financial distress and distress due to changes in everyday life may increase drinking levels [9–11]. Surprisingly, we found the impact of financial distress on alcohol consumption to be particularly pronounced among individuals with high incomes as compared to those with low or average incomes. One explanation could be that high-income individuals perceive loss of income or concerns around job insecurity as a greater threat to their current socioeconomic position.

[1] for a more general discussion on the use of the term representativeness in general population surveys, see [29]

Declarations

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Figures

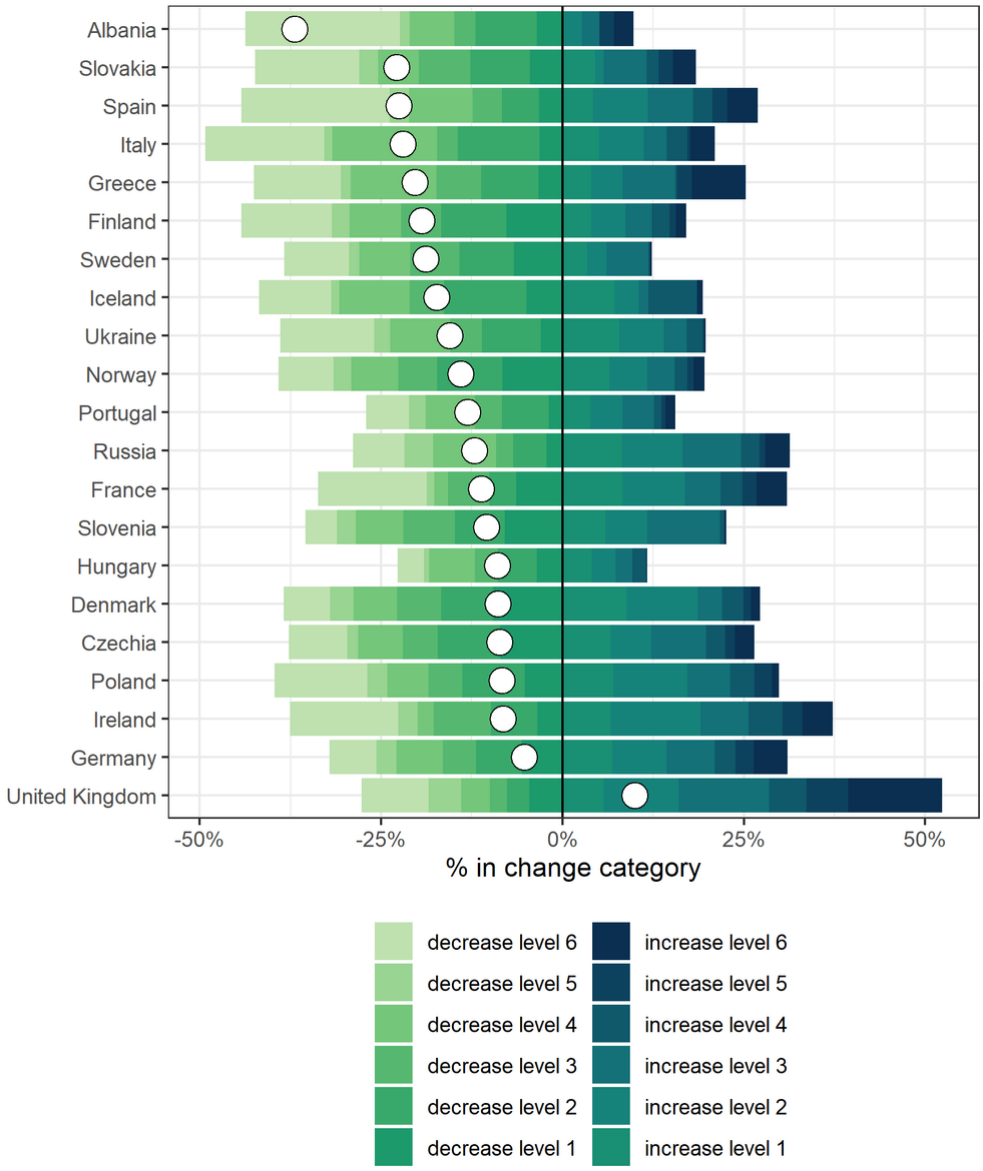

Figure 1

Distribution of the aggregate consumption change score and the weighted mean of the consumption-change score based on the calculated continuous variable (white circle) by country. Negative values (or decrease levels) indicate a decrease in overall consumption-change score, whereas positive values (or increase levels) indicate an increase. A darker color reflects a higher level of increase in the consumption-change score. All values are significant at $p < .050$, except for Ireland ($p = .084$). The levels 1 to 6 are the result of combining the two levels of each single change indicator (decrease: -2 and -1; increase: +1 and +2) and indicate the degree of change. While level 6 includes all people reporting “much” changes in all three indicators (drinking frequency, quantities of alcohol per occasion, frequency of heavy episodic drinking occasion), all other levels are a combination of (positive and/or negative) changes.

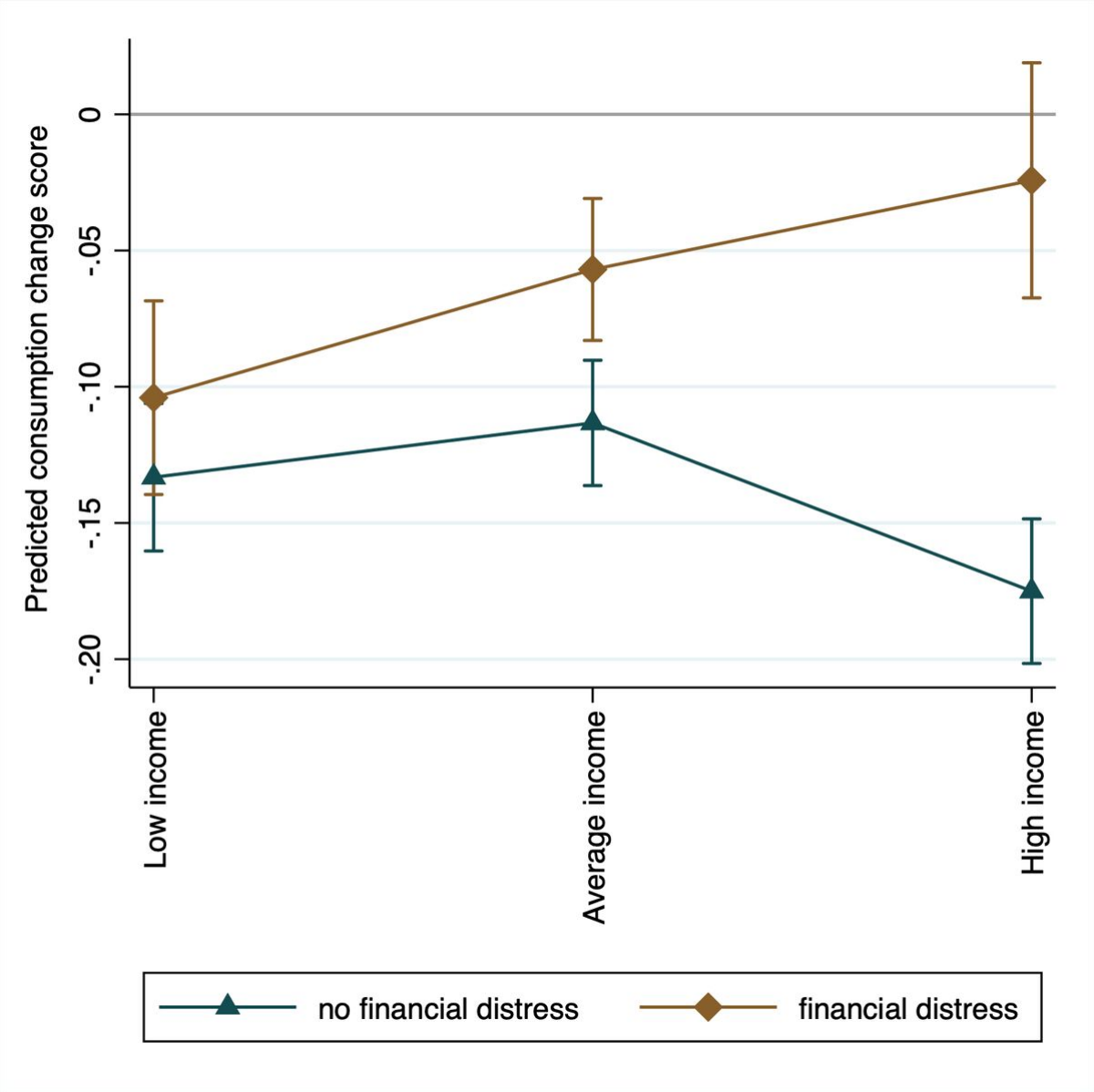

Figure 2

Predicted change in the consumption-change score by income and financial distress. The y-axis shows the predicted mean consumption-change score estimated by the regression model, with 0 indicating no change in consumption. In order to allow comparability across countries, income was z-standardised and logarithmised; low income: less than or equal to one standard deviation below the mean; average income: mean +/- one standard deviation; high income: more than or equal to one standard deviation above the mean.

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