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Abstract

Using US Census Household Pulse Survey data for the period April 2020 to June 2021 we track the evolution of the mental health of nearly 2.3 million Americans during the COVID pandemic. We find anxiety, depression and worry peaked in November 2020, coinciding with the Presidential election. The taking of prescription drugs for mental health conditions peaked two weeks later in December 2020. Mental health improved subsequently such that by April 2021 it was better than it had been a year previously. The probability of having been diagnosed with COVID did not rise significantly in the first half of 2021 but COVID infection rates were higher among the young than the old. COVID diagnoses were significantly lower in States that had voted for Biden in the Presidential Election. The probability of vaccination rose with age, was considerably higher in Biden states, and rose precipitously over the period among the young and old. Anxiety was higher among people in Biden states, whether they had been diagnosed or not, and whether they were vaccinated or not. The association between anxiety and depression and having had COVID was not significant in Biden or Trump states but being vaccinated was associated with lower anxiety and depression, with the effect being larger in Biden states. Whilst being in paid work was associated with lower anxiety, worry and depression and was associated with higher vaccination rates, it also increased the probability of having had COVID.

Keywords: COVID-19; pandemic; mental health; anxiety; depression; worry; vaccination; Biden; Trump
JEL Codes: I1; I18; I31; I38; H12

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1. Introduction

When it broke, the COVID pandemic had a sudden, unprecedented impact on the United States and its economy. The moment the shock occurred is traced in Chart 1 which plots Google Trends data showing the use of the term 'covid' in the United States from March 2020-June 2021. Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. A score of 0 means there was not enough data for this term. The use of the term exploded upwards from the start of March 2020 reaching an early peak of 95 on 22nd March 2020 before falling back. It reached a global maximum (1st November 2020=100) just before the presidential election in November 2020.

A more conventional way to measure an economic shock is with unemployment figures. According to the Department of Labor initial weekly claims for unemployment assistance (NSA) in the United States averaged just under 250,000 a week through 14th March 2020 and then exploded to 2.9 million on 21st March 2020 and 6 million on 28th March 2020.[3] The latest release has initial claims at 407,798 on 12th June 2021, still higher than pre-pandemic. The official US unemployment rate reported by the Bureau of Labor Statistics (BLS) went from 3.5% in February 2020 to 4.4% in March to 14.7% in April. That turned out to be an underestimate because the systems were not set up to deal with a shock that was also a major health shock. The true number for April 2020 was actually 19.7% once account was taken of the number of workers who were classified as employed but absent from work.[4] The undercount has continued since then and in the most recent data the unemployment rate is understated by 0.2 percentage points due to this misclassification problem. The labor market continues to struggle. In the most recent data for June 2021, BLS data show non-farm payrolls stood at 145,759,000 - still 6.8 million below their February 2020 peak.

This economic shock occurred in response to policy efforts to contain the COVID-19 virus by going into lockdown in March 2020. On March 16, President Trump announced "15 Days to Slow the Spread" - a series of guidelines based on Center for Disease Control and Prevention (CDC) recommendations on topics such as physical distancing, self-isolation, and protecting those at high risk. By March 21st, 2020, state governors in California, New York, Connecticut and Illinois issued stay-at home orders. By the end of March many other governors had done the same.

The spread of disease through large pandemics, and the deaths that come with it, are often associated with fear (Amsalem et al., 2020) which, when compounded by restrictions on

[3] https://oui.doleta.gov/unemploy/claims.asp
3/21/2020=2,914,107; 3/28/2020=5,981,787; 4/4/2020=6,161,308; 4/11/2020=4,897,867; 4/18/2020=4,221,556; 4/25/2020=3,468,261; 5/2/2020=2,793,245; 5/9/2020=2,326,632; 5/16/2020=2,163,595; 5/23/2020=1,902,793.

[4] Special instructions were sent to household survey interviewers to ensure that all employed persons absent from work due to coronavirus-related business closures were to be classified as unemployed on temporary layoff. However, it is apparent that not all such workers were so classified. "*If the workers who were recorded as employed but absent from work due to 'other reasons' (over and above the number absent for other reasons in a typical April) had been classified as unemployed on temporary layoff, the overall unemployment rate would have been almost 5 percentage points higher than reported (on a not seasonally adjusted basis). However, according to usual practice, the data from the household survey are accepted as recorded. To maintain data integrity, no ad hoc actions are taken to reclassify survey responses".* See Employment Situation, May 8th, 2020.
https://www.bls.gov/news.release/archives/empsit_05082020.htm

movement, social interaction and economic activity leading to further deteriorations in mental health (Berkowitz et al., 2020). The United States does not have a long-run series on well-being but the United Kingdom does. Since 2011 it has included four well-being measures in its Labor Force Survey - which is used to calculate the unemployment rate and is the equivalent of the Current Population Survey in the United States. They relate to life satisfaction, happiness, worthwhileness and the one we examine here, anxiety. Respondents are asked:

Q1. "On a scale where 0 is "not at all anxious" and 10 is "completely anxious", overall, how anxious did you feel yesterday.[5]

As shown below there was a decline in the level of anxiety over time; averaging the quarterly estimates we see anxiety declined from a mean of 3.15 in 2011 to 2.96 in 2013 and averaged 2.91 from 2013 to 2019.

2011	3.16
2012	3.05
2013	2.96
2014	2.90
2015	2.86
2016	2.90
2017	2.92
2018	2.86
2019	2.95
2019Q4	2.97

The UK has also included these questions in 31 weekly surveys conducted since the middle of March 2020. These data show that as the pandemic hit anxiety rose sharply as is illustrated in Chart 2. We included an estimate of 2.96 for the first observation (taken from the able above) we called January 1st to March 1st, 2020, to best illustrate the unprecedented rise in anxiety. The series made an extraordinary jump to 5.2 for 20-30 March, broadly consistent with what we saw for the word 'Covid' in Chart 1. The other well-being variable saw similar discontinuities. Similar findings are apparent in the UK's Household Longitudinal Survey (UKHLS), which recorded marked increases in mean GHQ-12 scores. The survey revealed an increase in the prevalence of clinically significant levels of mental distress from 19% in 2018/19 to 27% in April 2020, one month into UK lockdown (Pierce et al., 2020). The rise was greatest among those aged below 34 years and particularly among those aged 18-24 years.[6] These changes in mental health are unprecedented in both magnitude and speed.

In this paper we contribute to the literature by analyzing US Census Household Pulse Survey data for the period April 2020 to June 2021 to track the evolution of the mental health of nearly 2.3 million Americans during the COVID pandemic, and its correlates.

[5] Seasonally adjusted quarterly well-being estimates are available here https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/datasets/quarterlypersonalwellbeingestimatesseasonallyadjusted

[6] YouGov data for the UK also finds negative affect (a score combining anxiety, depression, worry and lack of interest) was greatest among the young during the COVID pandemic (Cotofan et al., 2021).

2. Mental health in the United States

Even prior to the Center for Disease Control and Prevention (CDC) announcement of the first COVID case in the United States on January 21st, 2020, the country had already suffered a prolonged decline in the mental well-being of its citizens.

As Chart 3 makes clear, reported happiness has been in decline since the beginning of the *General Social Survey* series in the early 1970s.[7] There was a small decline during the Great Recession from 2.18 in 2008 to 2.11 in 2014, but happiness recovered quickly. Similarly extreme distress has been steadily rising since data became available in the early 1990s.[8] This rise is shown for those under 30 and 30 and older in Chart 4. This has prompted economists to warn of a rising tide in deaths of despair (Case and Deaton, 2020), especially among those of prime age, the less educated and natives (Blanchflower and Feir, 2021). The growth in despair among the young is particularly notable: having been roughly flat in the first decade or so of the 21st Century, rates of despair rose precipitously among the under-30s from 2014/15, passing the rates of despair experienced by the over 30s in 2016.

The United States is not unusual in terms of the mental health problems in its population. It is mid-ranking among OECD countries, slightly above the average for the 11 OECD countries in Chart 5. Nor is it exceptional in experiencing a substantial deterioration in the mental health of its younger population. Countries like the UK have experienced similar trends (Sacker et al., 2021; Gagné, et al., 2021). Like other countries it had to contend with a massive shock to health with the COVID pandemic.

To date, evidence on trends in mental health in the United States during the COVID pandemic is limited. Mental Health America (2021) used a screening program to identify mental ill-health. They found that youth mental health in particular was worsening and even before the incidence of COVID the prevalence of mental illness among adults was also rising. They reported that 35% of the people they screened had depression while 20% had anxiety from January-September 2020. The proportion with moderate to severe anxiety rose from 71% in January to 80% in September (p. 6). Their findings are broadly consistent with what we report below.

There is evidence from Gallup (Witters and Agrawal, 2021) on a small sample of 4820 adults that the percentage of people reporting 7 or higher on a life satisfaction scale fell from 67.7% in the fall of 2019 to a low of 56.9% in April 2020. However, it has risen again subsequently back to 69.0% in June 2021. Analogously the percentage of people experiencing stress rose from 46% in 2019 to a peak of 60% during April 2020. The proportion of people reporting stress has now fallen back to 44% in June 2021. Worry followed a similar path.

Using a version of some of the data we use below Vahratian et al. (2021) tracked the change in anxiety and depressive disorders as well as taking prescription medications or receiving

[7] This is obtained from the question 'taken all together, how would you say things are these days—would you say that you are very happy (=3), pretty happy (=2), or not too happy (=1)?' For further details see Blanchflower and Oswald (2004).

[8] Here 'despair' is measured using data from the BRFSS (https://www.cdc.gov/brfss/index.html), using the question "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good? Despair is measures as 1 if the answer is 30 last 30 days are bad mental health days. For details see Blanchflower and Oswald (2020).

counselling between August 19 and February 1st, 2021. They found the increase in the percentage reporting symptoms on the majority of days rose most quickly among those aged under 30 (the 'young'). They also report an increase in prescription drug taking which peaked in midlife, as found in Blanchflower and Oswald (2020). Panchal et al. (2021) analysed the KFF *Health Tracking Poll* show that other signs of mental health deteriorated over the period including substance use, particularly among the young.

We extend this literature with data from the *Household Pulse Survey*, conducted by the US Census, which began in April 2020 and is ongoing and surveys nearly 2.3 million Americans (https://www.census.gov/programs-surveys/household-pulse-survey/data.html). Currently we have data from 31 sweeps of the survey that we pooled together.

We show that anxiety, depression and worry peaked in November 2020, coinciding with the Presidential election. The taking of prescription drugs for mental health conditions peaked two weeks later in December 2020. Mental health improved subsequently such that by April 2021 it was better than it had been a year previously. The probability of having COVID was roughly stable in the first half of 2021 for those aged under 30 (the 'young') and over 30s (the 'old') but levels of COVID infection were higher among the young than the old. COVID diagnoses were also significantly lower in States that had voted for Biden in the Presidential Election.

The probability of vaccination rose with age, was considerably higher in Biden states, and rose precipitously over the period among the young and old. Anxiety was higher among people in Biden states, whether they had been diagnosed or not, and whether they were vaccinated or not. The association between anxiety and depression and having had COVID was not significant in Biden or Trump states but being vaccinated was associated with lower anxiety and depression, with the effect being larger in Biden states. Whilst being in paid work was associated with lower anxiety, worry and depression and was associated with higher vaccination rates, it also increased the probability of having had COVID.

3. Data and Estimation

Our data are the *Household Pulse Survey (Covid 19)*, a 20-minute, online, survey conducted by the US Census Bureau gathering data for nearly 2.3 million people chosen randomly via residential addresses on the impact of the pandemic on their lives.[9] It began on April 23rd 2020 and continues to run. The data we use in this paper ends in June 2021. These are repeat cross-sectional data: there is no way to link the surveys at the level of the individual respondent over time.

As Vahratian et al (2021) note, there are methodological differences between phase 1 (April 23-July 21, 2020) and phase 2 (August 19-October 26, 2020) which complicate examination of trends across the two phases. These differences, they note, include a change in the data collection period from 6 days to 13 days, additional reminders sent to nonrespondents in phase 2, and elimination of a longitudinal component that was present in phase 1. We deal with this by including in all our regressions data of interview controls.

Respondents are asked to provide information on:

[9] https://www.census.gov/programs-surveys/household-pulse-survey.html

Q1. How often they have been feeling anxious/depressed/worried over the last seven days?[10]

Weighted responses are reported in Table 1 and suggest that by 2021 mental health had improved on all three measures. In 2020 almost one-third (31.4%) of respondents said they were feeling anxious most of the time, compared with one-fifth (21.6%) who said they were depressed most of the time, and over one-quarter (25.2%) who were worried most of the time. Mental health improved in 2021, with the percent feeling bad most of the time falling on all three metrics (29.5% were anxious most of the time; 20.6% were depressed most of the time; and 23.1% were worried most of the time). In Section Three we model these ordinal outcomes as if they were measured on cardinal scales using OLS.[11]

Since sweep 13 of the survey in August 2020, respondents have also been asked

*Q2. "At any time in the **last 4 weeks**, did you take prescription medication to help you with any emotions or with your concentration, behavior or mental health?"*

We have data on 1,255,987 respondents and 20.8% percent answered 'yes' to this question.[12] We examine trends in prescription drug taking in Section Three running linear estimation on this (0,1) outcome.

To establish the incidence of COVID infection we rely on the yes/no response to the question asked in 2021 but not in 2020.

Q2. "Has a doctor or other health care provider ever told you that you have COVID-19?"

This has been asked since sweep for January 6th-18th 2021and we have 740,710 respondents of whom 14.1% percent answered 'yes' to this question.[13]

To identify those who have received, or are about to receive the vaccine, we combine responses to the two questions

Q3. "Have you received a COVID-19 vaccine?"

and

Q4. "Did you receive (or do you plan to receive) all required doses?".

Those responding yes to either question are coded 1 on the (0,1) outcome identifying vaccination. Overall, 44.9% percent of survey respondents were vaccinated or intended to get vaccinated when

[10] These are based on 3 of the 4 items validated in the Patient Health Questionnaire (PHQ-4) for depression and anxiety. For details of how they were modified for the Pulse survey see Vahratian et al. (2021: 490).
[11] Results are similar if we run ordered probits.
[12] Weighted means are reported using the weight variable *pweight*. The regressions are unweighted.
[13] Of course, having the COVID virus is a necessary but not sufficient condition to answering 'yes' to this question since only those who have actually been diagnosed by a doctor or health care provider will say 'yes'. This depends, in part, on the likelihood that respondents will visit a health care provider for such a diagnosis or are sought out by health care professionals.

surveyed. As we show below there has been a rapid upward rise in this variable over the ten surveys that asked the question, from 7.7% in week to 78.9% in week 31 (May 26-June 7).

All independent variables used in the analysis are self-explanatory, with the exception, of our classification of Biden and Trump states. These are based on electoral college votes in 2020.[14]

3. Results

Table 2 presents regressions estimating the correlates of our three mental health measures – anxiety, depression and worry – for the period April 23rd, 2020, through to June 7th, 2021, together with a model identifying the correlates of prescription drug taking for mental health reasons for a shorter period over which these data were available (from late August 2020). In all cases we include controls for age, gender, education, race, state of residence, labor force and marital status and survey week.

Based on the coefficients on the dates of interview dummies, anxiety, depression and worry were all rising through most of 2020, peaking in November 2020, coinciding with the Presidential election on November 20th, 2020.[15] This is telling, given the evidence from previous research that the electorate tend to vote out incumbent leaders when subjective well-being is deteriorating (Ward, 2020).

The taking of prescription drugs for mental health conditions peaked two weeks later in December 2020 (column 4). Mental health improved subsequently on all three measures and was still improving by the end of our series (June 7, 2021) such that, by mid-April 2021, it was significantly better than it had been in April 2020 just shortly after the outbreak of the pandemic. Mental health was continuing to improve through to June 7, our last data point. This is also apparent in the raw data (Chart 6). Prescription drug taking, which was rising during the autumn, peaked at Christmas 2020, then dropped in the new year stabilising in March 2021 above previous levels.

Most of the correlates of mental health during the pandemic are similar to what we might expect in more 'normal' times. For example, Blacks and Asians exhibit poorer mental health than Whites; the married are happier than those who are not; the less educated have poorer mental health, as do the unemployed compared to those in paid work. It is also apparent that men are less likely than women to exhibit poor mental health.[16] But the correlates of poor mental health differ from those found in 'normal' times in one key respect. First, the standard finding in the literature is that well-being is u-shaped in age (Blanchflower and Graham, forthcoming) and depression and worry are hump-shaped in age (Blanchflower, 2020:472 Table 5). We would therefore expect poor mental health to peak in middle-age then recover. Instead, mental health is monotonically improving with age, a finding that is apparent with respect to anxiety, worry and depression. It would appear that

[14] See https://www.archives.gov/electoral-college/2020 The Trump states are Alabama; Arizona; Arkansas; Florida; Georgia; Idaho; Indiana; Iowa; Kansas; Kentucky; Louisiana; Mississippi; Missouri; Montana; Nevada; North Carolina; North Dakota; Ohio; Oklahoma; South Carolina; South Dakota; Tennessee; Texas; Utah; West Virginia and Wyoming. The Biden states are Alaska; California; Colorado; Connecticut; Delaware; District of Columbia; Hawaii; Illinois; Maine; Maryland; Massachusetts; Michigan; Minnesota; Nebraska; New Hampshire; New Jersey; New Mexico; New York; Oregon; Pennsylvania; Rhode Island; Vermont; Virginia; Washington and Wisconsin.

[15] It is, however, notable that anxiety was falling in May, just as it did in the UK (Charts 2 and 8).

[16] The literature consistently finds that women are both more likely than men to suffer disproportionately from poor mental health and, at the same time, express greater happiness (Graham and Chattopadhyay, 2020).

the mental health of the young has been particularly adversely affected by the pandemic, consistent with other studies for the United States and the UK discussed above. It is also notable that there are substantial differences in mental health across States. As we show below, mental health tends to be poorer in Biden states.[17]

In contrast the age effects on taking prescription drugs peak in midlife at age 40-44. This is consistent with evidence reported in Blanchflower and Oswald (2016) using Eurobarometer data for 2010 who found that the taking of anti-depressants in European countries peaked in people's late forties. We re-estimated this equation for 2020 and 2021 in light of the fact that Vahratian et al (2021) found that the peak of the function was lower in 2021 than in 2020. Blanchflower and Graham (forthcoming) find similarly using these data from Week 24, February 3-15, 2021. We did find in 2020 the peak was at age 45-49 whereas it was at age 40-44 in 2021. There was some evidence of the function flattening – below are the coefficients by age for the two periods compared to the excluded category 18-19. Each coefficient has a t-value of over 4.5 as is significantly different than the youngest age group.

	Year	
	2020	2021
Age 40-44	.0672	.0540
Age 45-49	.0677	.0524
Age 50-54	.0654	.0473
N	647,131	607,238

Table 3 shows estimates of the probability of having received a diagnosis of COVID by a health professional (column 1) and the probability of being vaccinated (column 2) in the first half of 2021. We do not have any data on COVID for 2020. The probability of having had COVID was roughly stable over time during the first six months of 2021 as the virus spread much less rapidly than it had previously as an increasing proportion of the population was vaccinated (column 2). Of course, the rise in COVID infection rates occurred in 2020, prior to our data starting. The very big increase in the probability of being vaccinated over the period (column 2) reflects the incoming government's priority to vaccinate citizens on a mass scale along with the increased availability of the vaccines.

The proportion who said they had received or will take vaccine rose rapidly in 2021 and was fast approaching President Biden's stated goal of having 70% of the adult population vaccinated by Independence Day.

	Trump state	Biden State	Age <30	Age ≥30
January 6th-18th	11	10	8	11
May 26th-June 7th	82	89	74	87

Workers had higher COVID diagnosis rates than non-workers, despite a higher probability of being vaccinated, consistent with the possibility that being at work – or commuting to it – raised the possibility of infection. Women were more likely than men to have been diagnosed with

[17] When we replace the State fixed effects with a Biden state dummy the coefficients are as follows: anxiety +.0496 (36.20); depressed +.0089 (8.00); worried +.0094 (7.23); prescribed medication -.0159 (21.54).

COVID, even though they were also more likely to be vaccinated. Similarly, White Hispanics were more likely to be diagnosed with COVID than other racial groups but, with the exception of Asians, they were also more likely to be vaccinated.

COVID diagnoses were significantly lower in States that had voted for Biden in the Presidential Election: living in a Biden state was associated with a 4 percentage-point lower probability of being diagnosed with COVID. Perhaps surprisingly COVID infection probabilities were highest among those aged 20-24 years, falling almost monotonically with age after that point. The CDC has supporting evidence on this showing that at the outset of the pandemic infection rates were highest among the old, but as time went on the younger age groups overtook them presumably as the vaccine was given to the older groups. This is reported in Chart 7. The question is why?

Presumably this has to do with availability of the vaccine and testing. Students, including those at Dartmouth, for example, have been tested frequently. It remains unclear what proportion of the young infected with COVID were asymptomatic. Finally, in keeping with the literature which suggests education promotes healthy behaviors, vaccination probabilities rise and COVID diagnoses fall with educational attainment.

Table 4 splits the analyses presented in Table 3 into separate estimates for the young (under-30s) and old (30 and over). It confirms little trend in the COVID diagnosis rate for either age group in 2021, but sharp rises in vaccination rates for both groups over time, with the slope slightly greater for over-30s. The lower probability of being diagnosed with COVID in a Biden State is apparent for both age groups, as is the higher rate of vaccination in a Biden State, though this is particularly pronounced among the over-30s. Most of the correlates of being diagnosed with COVID are similar across age groups, though the lower COVID diagnosis rates among the better educated are more apparent in the older age group.

Table 5 presents anxiety and depression equations separately for those in Trump and Biden States. The coefficients on nearly all variables in the models are very similar, as are the trends in anxiety and depression, as indicated by the similarities in the coefficients on time. However, the associations between having a COVID diagnosis and mental health are quite different: whereas having been diagnosed with COVID is not associated with anxiety or depression in Trump States, it is associated with significantly higher anxiety and depression levels in Biden States. Vaccination lowers anxiety and depression in both Trump and Biden states, but does so to a significantly greater extent in Biden states.

Finally, in Table 6 we consider the correlates of anxiety during 2021 for two mutually exclusive groups, namely those who had received a diagnosis of COVID at some point (column 1) and those who had not (column 2). The third column considers anxiety for the group who had been vaccinated, regardless of whether they had received a COVID diagnosis at some point with column 4 for those who had not. What is perhaps striking is that there is very little difference between the four equations. The models explain roughly 10% of the variance in anxiety in each case and coefficients on each variable are roughly comparable. For instance, we see that those in Biden states are significantly more likely to suffer anxiety than those in Trump states, whether they have been diagnosed with COVID or not, and even when they had received a vaccination.

4. Discussion

According to Mental Health America (2021) "*the number of people looking for help with anxiety and depression has skyrocketed*" since the beginning of the COVID pandemic. Between January and September 2020 315,220 people took their 'anxiety screen', an increase of 93% over 2019. Over half a million (534,784) took the depression screen – a 62% increase. The percentage reporting thoughts of suicide and self-harm is also rising. They say "*young people are struggling most with their mental health*".

There are indications though, that anxiety, depression and worry levels are declining once more (Chart 8 for the UK and Chart 9 for the United States). However, these improvements in well-being in the United States are more apparent among older people aged 30 and above than they are among the young aged under 30. Indeed, for the young, anxiety levels in early June 2021 were similar to those in late April 2020 and remained well above anxiety levels for older people (Chart 9).

The young are the most likely to have been diagnosed with COVID in 2021 and the least likely to have been vaccinated. This is true whether they live in a state that voted for Trump or Biden in the Presidential elections. It is notable that all of our mental health measures spiked at the election date of November 20th, 2020, and then declined.

It is troubling that during this period anxiety, depression and worry are falling with age, something that we think is specific to this COVID era. This contrasts with the usual finding that unhappiness is hump-shaped in age (Blanchflower, 2020 and Blanchflower and Graham, 2021a, 2021b). There is an inverted U-shape in the taking of anti-depressants more likely reflecting long run behavior. What we are seeing here are short run changes in well-being by the young who seem most impacted by the onset of the pandemic, lockdown and recession.

Whilst mental health problems have been in decline since they peaked in November 2020, major concerns remain regarding the impact of the pandemic on mental health and wider prospects, particularly among the young.

A major concern is that the young are likely to see long-run scarring as a result of the pandemic which has disrupted their ability to make the transition from school to work. The literature indicates that spells of unemployment create permanent scarring effects of workers' prospects, particularly for the young (Bell and Blanchflower, 2011a, 2011b; Ellwood, 1984; Gregg, 2001; Gregg and Tominey, 2005). The longer the spell the greater the scarring, as unemployment among the young prevents the young establishing a foothold in the labor market.

Being a member of large cohort also makes it harder to make a successful entry into the world of work. As Korenman and Neumark (2000) have noted the elasticity of the youth unemployment rate with respect to relative youth cohort size is positive. Furthermore, cohorts who graduate in worse national economies tend to end up in lower-level occupations. Giuliano and Spilimbergo (2009) suggest that the period of early adulthood (between the ages of 18 and 25) seems to be the age range during which people are more sensitive to macroeconomic conditions. They find that being exposed to a recession before age 17 or after age 25 has no impact on beliefs about life chances. However, youngsters growing up during recessions tend to believe that success in life

depends more on luck than on effort; they support more government redistribution but have less confidence in public institutions. Recessions seem to make youngsters more pessimistic about their lives.

Moreover, the lockdown may also have an impact on graduates' abilities to make their first step into the world of work given that Kahn (2010) has shown that there are deleterious consequences of graduating from college in a bad economy. This is potentially a particular problem given the number of workers that are furloughed, which are likely to be the first hired as the economy returns back to normal. Young people are likely to be at the back of the hiring queue, whether they are high school dropouts or graduates or college graduates.

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Table 1. Distribution of anxiety, depression and worry, USA 2020 and 2021 (weighted).

a) Mental health

	Anxious		Depressed		Worry	
	2020	2021	2020	2021	2020	2021
Not at all	34.9	41.0	47.3	51.1	43.4	48.6
Several days	33.8	29.5	31.1	28.4	31.3	28.3
More than half the days	13.6	11.8	10.4	9.4	11.8	10.2
Nearly every day	17.8	17.7	11.2	11.2	13.4	12.9
N	1652,390	623550	1,651,483	622,619	1,651189	622,458

Table 2. Anxiety, depression and worry, Census Household Pulse Surveys, #1-#31, April 23rd 2020-June 7th 2021

	Anxious	Depressed	Worry	Prescriptions
May 7-12	-.0112 (1.74)	.0278 (4.86)	.0083 (1.39)	
May 14-19	-.0063 (1.30)	.0296 (6.84)	.0069 (1.52)	
May 21-26	-.0341 (6.63)	.0302 (6.62)	-.0041 (0.86)	
May 28-June 2	-.0193 (3.79)	.0406 (8.95)	.0111 (2.32)	
June 4-9	.0040 (0.76)	.0452 (9.47)	.0282 (5.58)	
June 11-16	.0435 (7.91)	.0588 (12.03)	.0670 (12.96)	
June 18-23	.0374 (7.42)	.0583 (13.01)	.0647 (13.65)	
June 25-30	.0693 (13.49)	.0840 (18.39)	.1021 (21.12)	
July 2- 7	.0861 (16.46)	.0939 (20.19)	.1154 (23.41)	
July 9-14	.1116 (21.35)	.1079 (23.22)	.1388 (28.20)	
July 16-21	.1320 (24.92)	.1247 (26.48)	.1597 (32.03)	
Aug 19-31	.0416 (8.13)	.0645 (14.19)	.0602 (12.49)	
Sept 2-14	.0372 (7.31)	.0642 (14.17)	.0572 (11.93)	-.0010 (0.51)
Sept 16-28	.0638 (12.25)	.0886 (19.11)	.0793 (16.16)	.0063 (3.24)
Sept 30-Oct 12	.0638 (12.13)	.0778 (16.63)	.0747 (15.07)	.0041 (2.08)
Oct 14-26	.0854 (15.95)	.0982 (20.62)	.0973 (19.28)	.0109 (5.41)
Oct 28-Nov 9	.1870 (31.22)	.1429 (26.84)	.1693 (30.03)	.0146 (6.37)
Nov 11-23	.2043 (36.11)	.1564 (31.09)	.1790 (33.61)	.0180 (8.37)
Nov 25-Dec 7	.1433 (25.44)	.1504 (30.02)	.1442 (27.18)	.0208 (9.70)
Dec 9-21	.1520 (26.72)	.1713 (33.88)	.1527 (28.52)	.0215 (9.97)
Jan 6-18	.1753 (30.37)	.1557 (30.33)	.1569 (28.86)	.0149 (6.79)
Jan 20-Feb 1	.1404 (25.52)	.1381 (28.23)	.1295 (24.99)	.0171 (8.20)
Feb 3-15	.0837 (15.03)	.1277 (25.76)	.0995 (18.97)	.0168 (7.98)
Feb 17-March 1	.0402 (7.23)	.1094 (22.14)	.0621 (11.86)	.0157 (7.47)
March 3-15	-.0004 (0.08)	.0791 (15.98)	.0386 (7.37)	.0143 (6.78)
March 17-29	-.0474 (8.49)	.0425 (8.56)	.0003 (0.07)	.0121 (5.71)
April 14-26	-.1434 (24.84)	-.0209 (4.07)	-.0792 (14.58)	.0147 (6.69)
April 28-May 10	-.1704 (30.62)	-.0356 (7.19)	-.0905 (17.28)	.0164 (7.77)
May 12-24	-.1888 (33.26)	-.0524 (10.39)	-.1044 (19.54)	.0194 (8.95)
May 26-June 7	-.2104 (36.74)	-.0635 (12.46)	-.1125 (20.87)	.0153 (7.00)
Age 20-24	.1635 (13.68)	.1332 (12.52)	.2308 (20.50)	.0256 (3.78)
Age 25-29	.1874 (16.25)	.1127 (10.98)	.2789 (25.65)	.0385 (5.86)
Age 30-34	.1289 (11.30)	.0509 (5.01)	.2310 (21.47)	.0495 (7.63)
Age 35-39	.0710 (6.24)	-.0024 (0.24)	.1801 (16.79)	.0601 (9.28)
Age 40-44	.0202 (1.77)	-.0279 (2.75)	.1470 (13.69)	.0647 (9.98)
Age 45-49	-.0425 (3.72)	-.0543 (5.34)	.1142 (10.61)	.0644 (9.92)
Age 50-54	-.1026 (8.98)	-.0840 (8.27)	.0711 (6.61)	.0611 (9.41)
Age 55-59	-.1915 (16.78)	-.1473 (14.50)	-.0036 (0.34)	.0416 (6.41)
Age 60-64	-.3028 (26.54)	-.2404 (23.67)	-.1063 (9.89)	.0190 (2.93)
Age 65-69	-.4794 (41.95)	-.3701 (36.38)	-.2582 (23.98)	-.0112 (1.73)
Age 70-74	-.6059 (52.67)	-.4644 (45.36)	-.3588 (33.10)	-.0373 (5.73)
Age 75-79	-.7072 (60.39)	-.5433 (52.13)	-.4355 (39.46)	-.0639 (9.65)
Age 80-84	-.7885 (64.24)	-.6143 (56.24)	-.4921 (42.55)	-.0955 (13.86)
Age 85-88	-.7849 (58.89)	-.6130 (51.69)	-.4779 (38.04)	-.1107 (14.98)
Male	-.2277 (161.27)	-.0899 (71.65)	-.2009 (151.12)	-.0996 (30.51)
White non-Hispanic	.0125 (4.42)	.0003 (0.12)	-.0463 (17.35)	.0619 (40.59)
Black	-.1136 (30.59)	-.0636 (19.25)	-.0351 (10.04)	-.0536 (26.48)
Asian	-.1922 (46.27)	-.0483 (13.07)	-.0596 (15.25)	-.0653 (29.36)

Other	.0896 (21.78)	.0940 (25.67)	.0844 (21.77)	.0300 (13.51)
Widowed	.0978 (29.83)	.1812 (62.13)	.1030 (33.36)	.0532 (30.64)
Divorced	.2082 (05.54)	.2479 (141.25)	.2055 (110.62)	.0769 (72.13)
Separated	.3075 (59.73)	.3717 (81.19)	.3248 (66.99)	.0972 (34.12)
Never married	.1616 (80.56)	.2386 (133.78)	.1602 (84.84)	.0425 (38.93)
Government	-.2231 (88.40)	-.2630 (117.22)	-.2326 (97.90)	-.0577 (42.28)
Private company	-.2366 (32.42)	-.2568 (161.59)	-.2418 (43.66)	-.0741 (75.52)
Non-profit	-.1652 (59.06)	-.2387 (95.97)	-.2063 (78.32)	-.0354 (23.40)
Self-employed	-.1363 (48.40)	-.1997 (79.73)	-.1619 (61.05)	-.0671 (44.70)
Family business	-.1758 (28.35)	-.2146 (38.90)	-.1823 (31.22)	-.0629 (18.50)
Some high school	-.0511 (4.70)	-.0472 (4.87)	-.0454 (4.42)	-.0051 (0.85)
HS Diploma/GED	-.1128 (12.05)	-.1400 (16.80)	-.1332 (15.09)	-.0074 (1.42)
Some college	-.0280 (3.03)	-.1149 (13.93)	-.1078 (12.35)	.0253 (4.92)
Associates' degree	-.0711 (7.58)	-.1589 (19.01)	-.1505 (17.01)	.0290 (5.57)
Bachelors' degree	-.1110 (12.01)	-.2446 (29.71)	-.2469 (28.32)	.0044 (0.86)
Graduate degree	-.0989 (10.67)	-.2680 (32.46)	-.2643 (30.24)	.0117 (2.28)
Alaska	-.0028 (0.38)	-.0557 (8.21)	-.0660 (9.19)	-.0774 (18.65)
Arizona	.0457 (6.43)	.0008 (0.13)	.0059 (0.89)	-.0488 (12.31)
Arkansas	.0354 (4.33)	.0197 (2.71)	.0288 (3.74)	.0107 (2.32)
California	.1378 (21.89)	.0496 (8.87)	.0608 (10.27)	-.0561 (15.86)
Colorado	.0586 (8.14)	-.0095 (1.49)	-.0051 (0.76)	-.0418 (10.56)
Connecticut	.0713 (9.17)	-.0154 (2.22)	.0087 (1.19)	-.0322 (7.48)
Delaware	.0252 (3.07)	-.0331 (4.53)	-.0143 (1.85)	-.0301 (6.45)
DC	.1220 (14.56)	.0144 (1.93)	-.0033 (0.42)	-.0414 (8.98)
Florida	.0876 (12.99)	.0153 (2.56)	.0638 (10.06)	-.0427 (11.20)
Georgia	.0369 (5.07)	-.0123 (1.90)	.0093 (1.37)	-.0254 (6.20)
Hawaii	.0442 (5.25)	-.0354 (4.72)	-.0108 (1.37)	-.0784 (16.34)
Idaho	-.0278 (3.62)	-.0552 (8.08)	-.0638 (8.83)	-.0281 (6.65)
Illinois	.0763 (10.55)	.0067 (1.04)	.0228 (3.36)	-.0430 (10.71)
Indiana	.0006 (0.08)	-.0268 (3.97)	-.0237 (3.31)	-.0090 (2.14)
Iowa	-.0443 (5.59)	-.0655 (9.29)	-.0621 (8.31)	-.0105 (2.38)
Kansas	-.0091 (1.17)	-.0328 (4.73)	-.0323 (4.40)	-.0173 (4.01)
Kentucky	.0435 (5.34)	.0132 (1.83)	.0295 (3.85)	.0029 (0.64)
Louisiana	.0916 (11.12)	.0593 (8.10)	.0834 (10.76)	.0153 (3.25)
Maine	.0617 (7.12)	-.0337 (4.37)	-.0019 (0.24)	-.0155 (3.09)
Maryland	.0579 (7.93)	-.0066 (1.03)	-.0007 (0.11)	-.0292 (7.28)
Massachusetts	.0850 (12.01)	-.0208 (3.31)	.0036 (0.55)	-.0256 (6.53)
Michigan	.0228 (3.19)	-.0274 (4.31)	-.0173 (2.57)	-.0361 (8.97)
Minnesota	-.0197 (2.68)	-.0901 (13.72)	-.0840 (12.08)	-.0223 (5.49)
Mississippi	.0189 (2.15)	.0325 (4.16)	.0458 (5.54)	-.0026 (0.51)
Missouri	.0250 (3.22)	-.0155 (2.26)	-.0094 (1.29)	-.0057 (1.32)
Montana	-.0155 (1.87)	-.0631 (8.54)	-.0522 (6.66)	-.0337 (7.08)
Nebraska	-.0742 (9.35)	-.0698 (9.88)	-.0803 (10.74)	-.0263 (5.95)
Nevada	.0784 (10.05)	.0272 (3.93)	.0562 (7.65)	-.0718 (16.57)
New Hampshire	.0188 (2.37)	-.0441 (6.23)	-.0228 (3.05)	-.0263 (5.93)
New Jersey	.0940 (12.44)	.0099 (1.48)	.0495 (6.97)	-.0561 (13.37)
New Mexico	.1141 (14.81)	.0522 (7.62)	.0514 (7.09)	-.0378 (8.97)
New York	.0968 (13.15)	.0154 (2.36)	.0352 (5.08)	-.0530 (12.82)
North Carolina	.0183 (2.40)	-.0407 (6.00)	-.0252 (3.50)	-.0170 (3.96)
North Dakota	-.1531 (16.63)	-.1348 (16.47)	-.1471 (16.98)	-.0341 (6.67)
Ohio	.0081 (1.04)	-.0162 (2.34)	-.0266 (3.62)	-.0276 (6.27)

Oklahoma	.0457 (5.72)	.0119 (1.69)	.0249 (3.31)	-.0042 (0.96)
Oregon	.1755 (24.21)	.0713 (1.07)	.0724 (10.61)	-.0302 (7.60)
Pennsylvania	.0798 (11.10)	.0150 (2.35)	.0212 (3.13)	-.0223 (5.57)
Rhode Island	.0350 (4.10)	-.0544 (7.17)	-.0176 (2.20)	-.0114 (-2.33)
South Carolina	-.0162 (2.03)	-.0438 (6.16)	-.0330 (4.39)	-.0184 (4.10)
South Dakota	-.1175 (13.29)	-.1196 (5.23)	-.1208 (14.53)	-.0398 (8.15)
Tennessee	.0159 (2.05)	-.0084 (1.22)	-.0013 (0.18)	-.0130 (2.98)
Texas	.0498 (7.68)	.0052 (0.91)	.0236 (3.88)	-.0366 (10.04)
Utah	-.0157 (2.21)	-.0333 (5.27)	-.0623 (9.32)	-.0065 (1.68)
Vermont	.0597 (6.93)	-.0127 (1.67)	-.0189 (2.33)	-.0318 (6.69)
Virginia	.0222 (3.08)	-.0229 (3.58)	-.0245 (3.62)	-.0383 (9.65)
Washington	.1042 (15.28)	.0215 (3.55)	.0185 (2.88)	-.0338 (8.98)
West Virginia	.0602 (6.97)	.0504 (6.57)	.0570 (7.02)	.0092 (1.89)
Wisconsin	-.0227 (2.91)	-.0629 (9.07)	-.0643 (8.76)	-.0320 (7.41)
Wyoming	-.0663 (7.48)	-.0597 (7.58)	-.0748 (8.95)	-.0538 (10.90)
Constant	2.4188	2.1334	2.1750	.2219
Adjusted R^2	.0994	.0831	.0891	.0451
N	2,273,105	2,271,357	2,270,872	1,254,369

Notes: Excluded Alabama; age 18-19; married; not working; white Hispanic; April 23-May 5th 2020, and August 19-31 in column 4. T-statistics in parentheses.

Table 3. Diagnosed with Covid or vaccinated.

	Had Covid19	Vaccinated
Biden state	-.0431 (58.48)	.0059 (6.48)
Jan 20-Feb 1	-.0026 (1.59)	.0715 (34.86)
Feb 3-15	-.0011 (0.70)	.1567 (75.55)
Feb 17-March 1	.0006 (0.41)	.2339 (113.01)
March 3-15	-.0027 (1.69)	.3441 (166.52)
March 17-29	-.0028 (1.70)	.4793 (231.11)
April 14-26	-.0007 (0.45)	.6838 (320.81)
April 28-May 10	-.0045 (2.76)	.7199 (348.40)
May 12-24	-.0036 (2.19)	.7352 (349.66)
May 26-June 7	-.0011 (0.67)	.7485 (353.44)
Age 20-24	.0287 (4.92)	.0037 (0.51)
Age 25-29	.0143 (2.56)	-.0065 (0.88)
Age 30-34	-.0018 (0.33)	.0065 (0.94)
Age 35-39	-.0116 (2.11)	.0214 (3.11)
Age 40-44	-.0081 (1.47)	.0290 (4.22)
Age 45-49	-.0034 (0.62)	.0496 (7.18)
Age 50-54	-.0077 (1.40)	.0689 (9.98)
Age 55-59	-.0144 (2.63)	.0983 (14.27)
Age 60-64	-.0299 (5.43)	.1340 (19.47)
Age 65-69	-.0520 (9.44)	.2496 (36.19)
Age 70-74	-.0612 (11.02)	.3153 (45.40)
Age 75-79	-.0677 (11.98)	.3681 (52.06)
Age 80-84	-.0731 (12.35)	.3963 (53.52)
Age 85-88	-.0687 (10.74)	.3830 (47.97)
Male	-.0086 (11.39)	-.0275 (28.86)
White non-Hispanic	-.0585 (41.56)	-.0185 (10.51)
Black	-.0410 (22.00)	-.0483 (20.71)
Asian	-.0790 (37.82)	.0322 (12.33)
Other	-.0437 (20.32)	-.0389 (14.51)
Widowed	-.0034 (2.07)	-.0310 (14.66)
Divorced	-.0078 (7.32)	-.0388 (29.05)
Separated	.0129 (4.61)	-.0566 (16.12)
Never married	-.0210 (19.08)	-.0198 (14.36)
Government	.0153 (11.06)	.1328 (76.25)
Private company	.0156 (16.07)	.0545 (44.67)
Non-profit	.0132 (8.74)	.2066 (108.38)
Self-employed	.0061 (4.05)	.0026 (1.38)
Family business	.0159 (4.62)	-.0056 (1.31)
Some high school	-.0240 (4.38)	.0123 (1.83)
HSD	-.0410 (8.74)	.0475 (8.23)
Some college	-.0468 (10.10)	.0916 (16.06)
Associate's degree	-.0437 (9.28)	.1244 (21.46)
Bachelor's degree	-.0685 (14.80)	.1593 (27.95)
Graduate degree	-.0839 (18.08)	.2037 (35.65)
Constant	.2335	-.1607
Adjusted R^2	.0220	.3822
N	738,665	743,430

Notes: Excluded: married; not working; white Hispanic; January 6^{th}-18^{th}. In columns 1 and 3 there are two age dummies while in columns 2 and 4 there are 11. T-statistics in parentheses

Table 4. Diagnosed with Covid or vaccinated.

	Had Covid19		Vaccinated	
	Age <30	Age>30	Age <30	Age>30
Biden state	-.0411 (12.60)	-.0433 (57.41)	.0213 (6.12)	.0047 (4.93)
Jan 20-Feb 1	.0011 (0.17)	-.0028 (1.70)	.0315 (4.33)	.0760 (35.60)
Feb 3-15	-.0001 (0.02)	-.0011 (0.70)	.0632 (8.41)	.1655 (76.85)
Feb 17-March 1	-.0102 (1.46)	.0014 (0.87)	.0871 (11.59)	.2465 (114.70)
March 3-15	-.0025 (0.36)	-.0027 (1.63)	.1255 (16.74)	.3618 (168.61)
March 17-29	-.0046 (0.65)	-.0025 (1.51)	.2136 (28.20)	.5002 (232.33)
April 14-26	-.0014 (0.21)	-.0006 (0.38)	.5288 (68.42)	.6970 (314.87)
April 28-May 10	-.0083 (1.19)	-.0041 (2.47)	.6024 (80.33)	.7305 (340.46)
May 12-24	.0019 (0.28)	-.0039 (2.31)	.6270 (82.79)	.7451 (341.07)
May 26-June 7	-.0096 (1.35)	-.0004 (0.23)	.6568 (85.78)	.7573 (344.29)
Male	-.0224 (6.78)	-.0076 (9.83)	-.0465 (13.16)	-.0260 (26.33)
White non-Hispanic	-.0696 (14.17)	-.0565 (38.27)	-.0190 (3.62)	-.0184 (9.86)
Black	-.0685 (9.50)	-.0375 (19.40)	-.1147 (14.89)	-.0426 (17.37)
Asian	-.1140 (15.53)	-.0747 (34.18)	.0429 (5.48)	.0292 (10.56)
Other	-.0716 (10.01)	-.0395 (17.46)	-.0353 (4.63)	-.0391 (13.70)
Widowed	.1054 (2.47)	-.0038 (2.29)	.0483 (1.11)	-.0323 (15.25)
Divorced	.0247 (1.82)	-.0081 (7.68)	-.0136 (0.94)	-.0400 (29.81)
Separated	.0683 (3.41)	.0112 (3.99)	-.0254 (1.19)	-.0584 (16.41)
Never married	-.0018 (0.46)	-.0227 (19.81)	.0332 (7.62)	-.0265 (18.22)
Government	.0169 (2.76)	.0152 (10.70)	.1086 (16.57)	.1345 (74.59)
Private company	.0118 (3.00)	.0156 (15.56)	.0327 (7.77)	.0558 (43.80)
Non-profit	-.0057 (0.84)	.0145 (9.35)	.1675 (23.03)	.2088 (105.91)
Self-employed	-.0142 (1.66)	.0069 (4.57)	-.0467 (5.09)	.0053 (2.78)
Family business	.0129 (1.14)	.0161 (4.42)	-.0374 (3.08)	-.0014 (0.31)
LF status missing	.0239 (1.42)	.0374 (9.68)	.0312 (1.74)	.0773 (15.78)
Some high school	-.0168 (0.83)	-.0524 (10.97)	.0270 (1.26)	.0111 (1.56)
HSD	-.0120 (0.64)	-.0431 (8.92))	.0237 (1.19)	.0505 (8.39)
Some college	.0175 (0.94)	-.0524 (10.97)	.1235 (6.24)	.0889 (14.95)
Associate's degree	.0341 (1.75)	-.0493 (10.18)	.1558 (7.56)	.1220 (20.23)
Bachelor's degree	-.0054 (0.29)	-.0736 (15.43)	.2302 (11.53)	.1538 (25.92)
Graduate degree	-.0301 (1.55)	-.0886 (18.54)	.2994 (14.56)	.1990 (33.46)
Constant	.2070	.2342	-.0615	-.1609
Adjusted R^2	.0147	.0216	.3564	.3816
N	50,558	688,107	51,044	692,386

Notes: Excluded: married; not working; white Hispanic; January 6^{th}-18^{th}. In columns 1 and 3 there are two age dummies while in columns 2 and 4 there are 11. T-statistics in parentheses.

Table 5. Anxiety, Census Household Pulse Surveys, 2021 - all equations include state dummies

	Anxious		Depressed	
	Trump state	Biden State	Trump state	Biden State
Had Covid	-.0016 (0.29)	.0029 (0.48)	-.0045 (0.88)	.0042 (0.77)
Vaccinated	-.0292 (5.99)	-.0612 (13.54)	-.0493 (11.39)	-.0785 (19.69)
Jan 20-Feb 1	-.0186 (2.15)	-.0406 (5.23)	-.0025 (0.33)	-.0197 (2.89)
Feb 3-15	-.0851 (9.68)	-.0829 (10.50)	-.0216 (2.77)	-.0115 (1.66)
Feb 17-March 1	-.1168 (13.21)	-.1291 (16.33)	-.0313 (3.99)	-.0280 (4.02)
March 3-15	-.1571 (17.62)	-.1600 (19.97)	-.0566 (7.16)	-.0486 (6.90)
March 17-29	-.1903 (20.85)	-.2056 (25.16)	-.0779 (9.63)	-.0803 (11.17)
April 14-26	-.2969 (30.49)	-.2753 (31.77)	-.1451 (16.79)	-.1177 (15.42)
April 28-May 10	-.3034 (32.26)	-.3149 (36.78)	-.1458 (17.48)	-.1379 (18.29)
May 12-24	-.3303 (34.53)	-.3248 (37.21)	-.1685 (19.86)	-.1485 (19.33)
May 26-June 7	-.3371 (34.91)	-.3582 (40.62)	-.1699 (19.83)	-.1666 (21.46)
Male	-.2038 (49.73)	-.2040 (56.87)	-.0887 (24.41)	-.0757 (23.96)
Age 20-24	.0998 (2.59)	.1301 (3.66)	.1048 (3.07)	.1641 (5.24)
Age 25-29	.0861 (2.31)	.1027 (2.99)	.0535 (1.62)	.0967 (3.20)
Age 30-34	.0121 (0.33)	.0266 (0.78)	-.0075 (0.23)	.0230 (0.77)
Age 35-39	-.0615 (1.67)	-.0553 (1.64)	-.0815 (2.50)	-.0339 (1.14)
Age 40-44	-.1062 (2.89)	-.1029 (3.04)	-.1028 (3.15)	-.0712 (2.39)
Age 45-49	-.1583 (4.29)	-.1780 (5.25)	-.1283 (3.93)	-.1092 (3.66)
Age 50-54	-.2270 (6.16)	-.2209 (6.52)	-.1702 (5.21)	-.1283 (4.30)
Age 55-59	-.3146 (8.54)	-.3086 (9.12)	-.2353 (7.20)	-.1886 (6.33)
Age 60-64	-.4250 (11.55)	-.4253 (12.58)	-.3188 (9.77)	-.2861 (9.61)
Age 65-69	-.5991 (16.26)	-.5954 (17.59)	-.4546 (13.91)	-.4079 (13.69)
Age 70-74	-.7204 (19.45)	-.7061 (20.77)	-.5531 (16.85)	-.4850 (16.20)
Age 75-79	-.7982 (21.32)	-.7898 (22.98)	-.6101 (18.38)	-.5490 (18.14)
Age 80-84	-.8831 (22.90)	-.8643 (24.44)	-.6929 (20.27)	-.6096 (19.57)
Age 85-88	-.8947 (21.91)	-.8848 (23.83)	-.7149 (19.75)	-.6318 (19.33)
White non-Hispanic	-.0126 (1.58)	.0096 (1.37)	-.0139 (1.96)	.0008 (0.13)
Black	-.0937 (9.07)	-.1004 (10.35)	-.0697 (7.60)	-.0803 (9.41)
Asian	-.1668 (12.11)	-.1908 (20.00)	-.0347 (2.84)	-.0586 (6.97)
Other	.1100 (8.84)	.0832 (8.16)	.1022 (9.26)	.0904 (10.06)
Widowed	.1207 (13.98)	.0979 (12.00)	.1930 (25.18)	.1788 (24.86)
Divorced	.2386 (42.63)	.2009 (39.54)	.2594 (52.24)	.2302 (51.48)
Separated	.3754 (24.47)	.3284 (24.07)	.4007 (29.45)	.3702 (30.82)
Never married	.1918 (30.81)	.1688 (33.44)	.2548 (46.14)	.2372 (53.37)
Government	-.2209 (29.16)	-.2061 (31.70)	-.2571 (38.27)	-.2315 (40.46)
Private company	-.2545 (48.49)	-.2337 (49.86)	-.2577 (55.35)	-.2332 (56.51)
Non-profit	-.1889 (22.00)	-.1536 (22.07)	-.2424 (31.84)	-.2009 (32.78)
Self-employed	-.1459 (18.19)	-.1115 (15.53)	-.2015 (28.32)	-.1673 (26.46)
Family business	-.1691 (9.54)	-.1050 (5.96)	-.1948 (12.39)	-.1460 (9.41)
Some high school	.0189 (0.61)	-.0752 (2.60)	.0139 (0.50)	-.0705 (2.77)
HS Diploma/GED	-.0856 (3.20)	-.1454 (5.94)	-.1177 (4.96)	-.1431 (6.63)
Some college	.0007 (0.03)	-.0531 (2.20)	-.0813 (3.46)	-.1068 (5.01)
Associate's degree	-.0429 (1.60)	-.0967 (3.95)	-.1279 (5.37)	-.1552 (7.19)
Bachelor's degree	-.1238 (4.68)	-.1413 (5.86)	-.2338 (9.95)	-.2375 (11.17)
Graduate degree	-.1142 (4.30)	-.1371 (5.68)	-.2531 (10.73)	-.2685 (12.60)
Constant	2.7429	2.7492	2.3753	2.2844
Adjusted R^2	.1076	.1081	.0949	.0892
N	273,032	344,040	272,676	343,539

Table 6. Anxiety, Census Household Pulse Surveys, 2021

	Diagnosed with covid	Not diagnosed with covid	Vaccinated	Not vaccinated
Biden state	.0442 (5.37)	.0441 (15.96)	.0325 (9.57)	.0544 (13.51)
Jan 20-Feb 1	-.0173 (0.96)	-.0362 (5.94)	-.0204 (1.34)	-.0285 (4.34)
Feb 3-15	-.0630 (3.44)	-.0946 (15.32)	-.0611 (4.20)	-.0810 (11.78)
Feb 17-March 1	-.0923 (5.07)	-.1400 (22.68)	-.1036 (7.32)	-.1132 (15.97)
March 3-15	-.1297 (7.06)	-.1812 (29.38)	-.1302 (9.42)	-.1466 (19.52)
March 17-29	-.1715 (9.33)	-.2286 (36.91)	-.1583 (11.66)	-.1987 (23.93)
April 14-26	-.2497 (13.27)	-.3250 (50.91)	-.2408 (17.92)	-.3066 (27.14)
April 28-May 10	-.2254 (12.31)	-.3592 (58.22)	-.2711 (20.37)	-.3255 (28.15)
May 12-24	-.2778 (14.92)	-.3729 (59.35)	-.2845 (21.30)	-.3704 (30.10)
May 26-June 7	-.2888 (15.43)	-.3963 (62.53)	-.3089 (23.11)	-.3763 (28.65)
Age 20-24	.0413 (0.56)	.1314 (4.68)	.2176 (4.70)	.0707 (2.17)
Age 25-29	.0593 (0.83)	.1046 (3.86)	.1533 (3.42)	.0746 (2.37)
Age 30-34	-.0353 (0.50)	.0332 (1.24)	.0635 (1.43)	.0102 (0.33)
Age 35-39	-.0880 (1.24)	-.0490 (1.84)	-.0398 (0.90)	-.0531 (1.71)
Age 40-44	-.1274 (1.80)	-.0966 (3.63)	-.0829 (1.87)	-.1025 (3.30)
Age 45-49	-.1898 (2.68)	-.1612 (6.04)	-.1636 (3.70)	-.1521 (4.88)
Age 50-54	-.2411 (3.40)	-.2160 (-8.10)	-.2271 (5.14)	-.1984 (6.37)
Age 55-59	-.3223 (4.55)	-.3061 (11.48)	-.3176 (7.19)	-.2845 (9.13)
Age 60-64	-.4394 (6.19)	-.4219 (15.85)	-.4279 (9.69)	-.4023 (12.91)
Age 65-69	-.5881 (8.24)	-.6029 (22.63)	-.5904 (13.38)	-.5748 (18.35)
Age 70-74	-.7464 (10.36)	-.7169 (26.81)	-.6958 (15.74)	-.6930 (21.88)
Age 75-79	-.8232 (11.13)	-.7994 (29.61)	-.7620 (17.17)	-.7933 (24.36)
Age 80-84	-.8826 (11.14)	-.8800 (31.75)	-.8352 (18.60)	-.8739 (24.97)
Age 85-88	-.7062 (8.03)	-.9076 (31.18)	-.8474 (18.45)	-.8522 (22.11)
Male	-.2119 (24.57)	-.2012 (70.89)	-.1968 (56.01)	-.2122 (51.31)
White non-Hispanic	-.0241 (1.81)	-.0262 (4.69)	-.0528 (7.58)	.0048 (0.64)
Black	-.0538 (2.91)	-.1137 (15.30)	-.0934 (9.95)	-.1151 (11.49)
Asian	-.1005 (4.05)	-.2020 (24.99)	-.2014 (20.44)	-.1867 (15.85)
Other	.0947 (4.42)	.0735 (8.76)	.0752 (6.96)	.0894 (8.02)
Widowed	.1940 (9.27)	.1046 (16.94)	.0977 (13.58)	.1304 (13.13)
Divorced	.2341 (19.64)	.2208 (55.75)	.2130 (43.44)	.2302 (40.05)
Separated	.3662 (13.02)	.3584 (32.72)	.3540 (24.11)	.3623 (25.57)
Never married	.1813 (14.43)	.1852 (45.01)	.1682 (31.62)	.2005 (34.99)
Government	-.2742 (18.51)	-.2198 (42.32)	-.1724 (27.18)	-.2709 (35.19)
Private company	-.2800 (26.63)	-.2455 (66.35)	-.1992 (41.34)	-.2912 (57.54)
Non-profit	-.2548 (15.34)	-.1794 (31.77)	-.1445 (21.95)	-.2044 (22.07)
Self-employed	-.1777 (10.30)	-.1246 (22.16)	-.0564 (7.89)	-.1996 (25.05)
Family business	-.2191 (6.02)	-.1332 (10.00)	-.0881 (4.95)	-.1890 (10.77)
Some high school	-.1897 (3.64)	.0022 (0.10)	-.0814 (2.38)	-.0177 (0.65)
HS Diploma/GED	-.1864 (4.27)	-.1082 (5.44)	-.1775 (6.15)	-.1116 (4.83)
Some college	-.0979 (2.27)	-.0178 (0.91)	-.0962 (3.37)	-.0128 (0.56)
Associate degree	-.1054 (2.40)	-.0712 (3.58)	-.1306 (4.54)	-.0707 (3.04)
Bachelor degree	-.2044 (4.74)	-.1234 (6.28)	-.2001 (7.03)	-.1165 (5.10)
Graduate degree	-.1820 (4.19)	-.1164 (5.91)	-.1984 (6.97)	-.0906 (3.95)
Constant	2.8498	2.7978	2.7697	2.7878
Adjusted R^2	.0880	.1075	.0985	.0786
N	66,462	551,462	327,940	293,641

Chart 1. Google Trends plot of the word "COVID" for the United States, 2020-2021

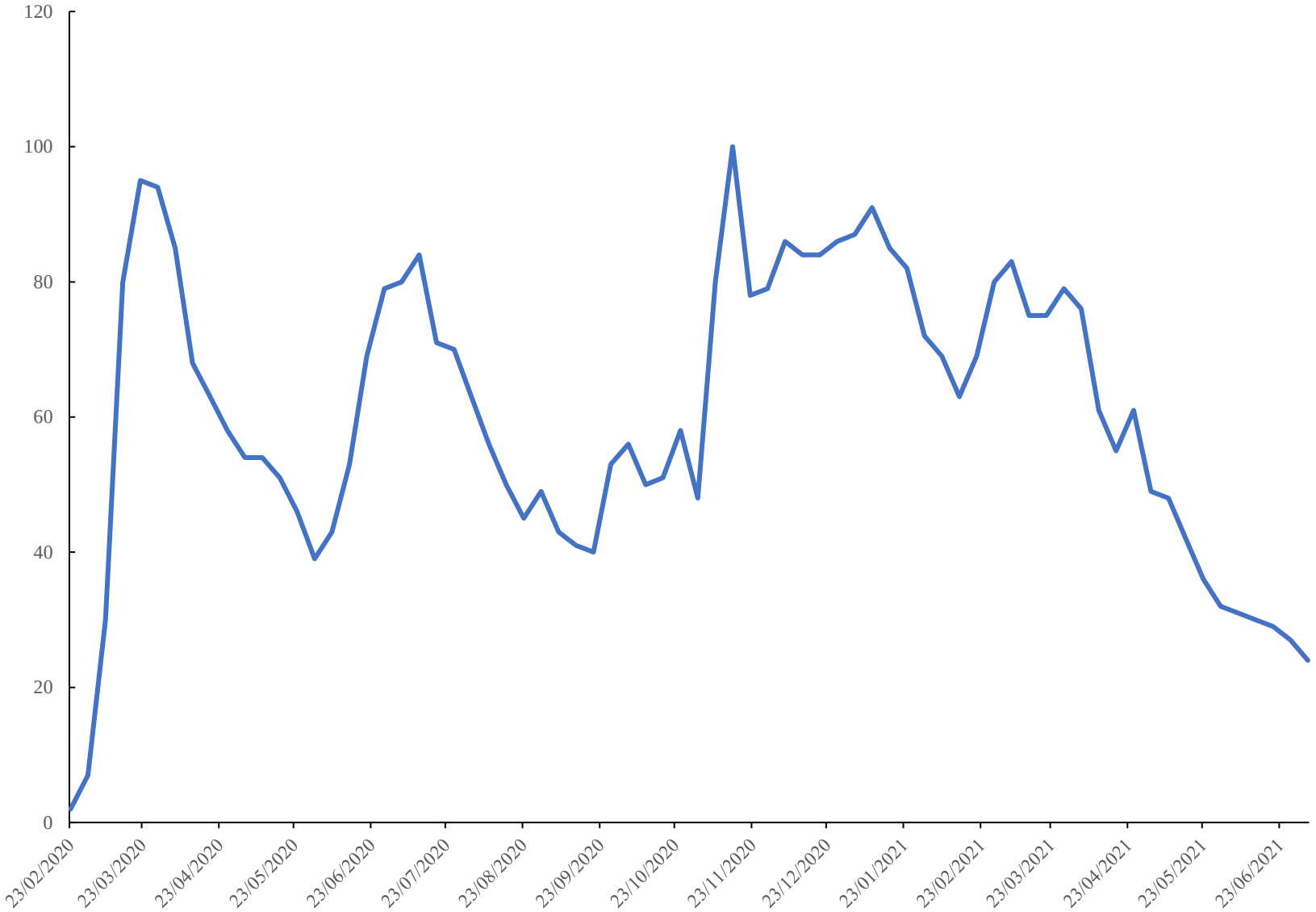


Chart 2. Anxiety in the UK, 2020-2021

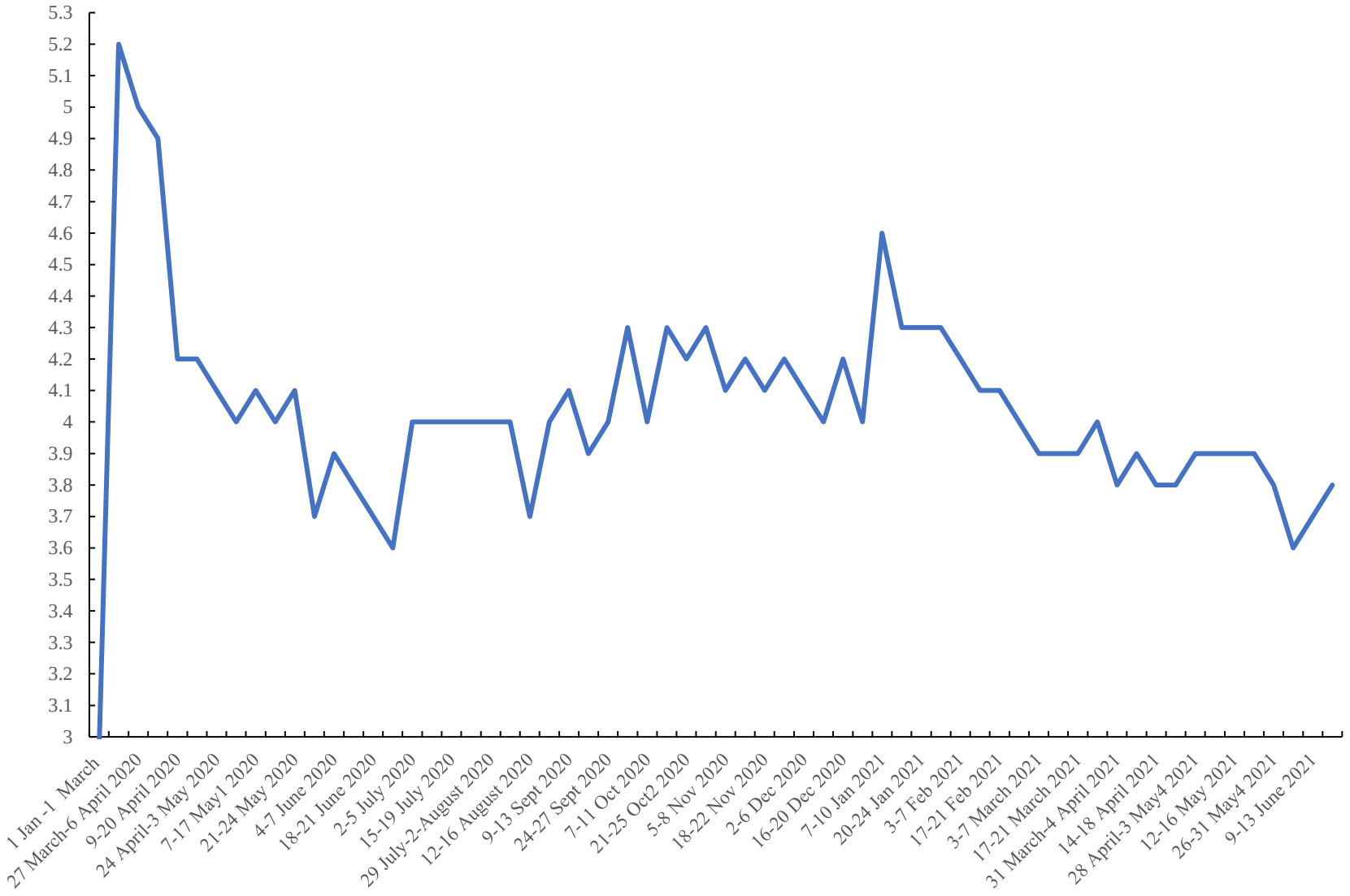


Chart 3. Happiness from the General Social Survey

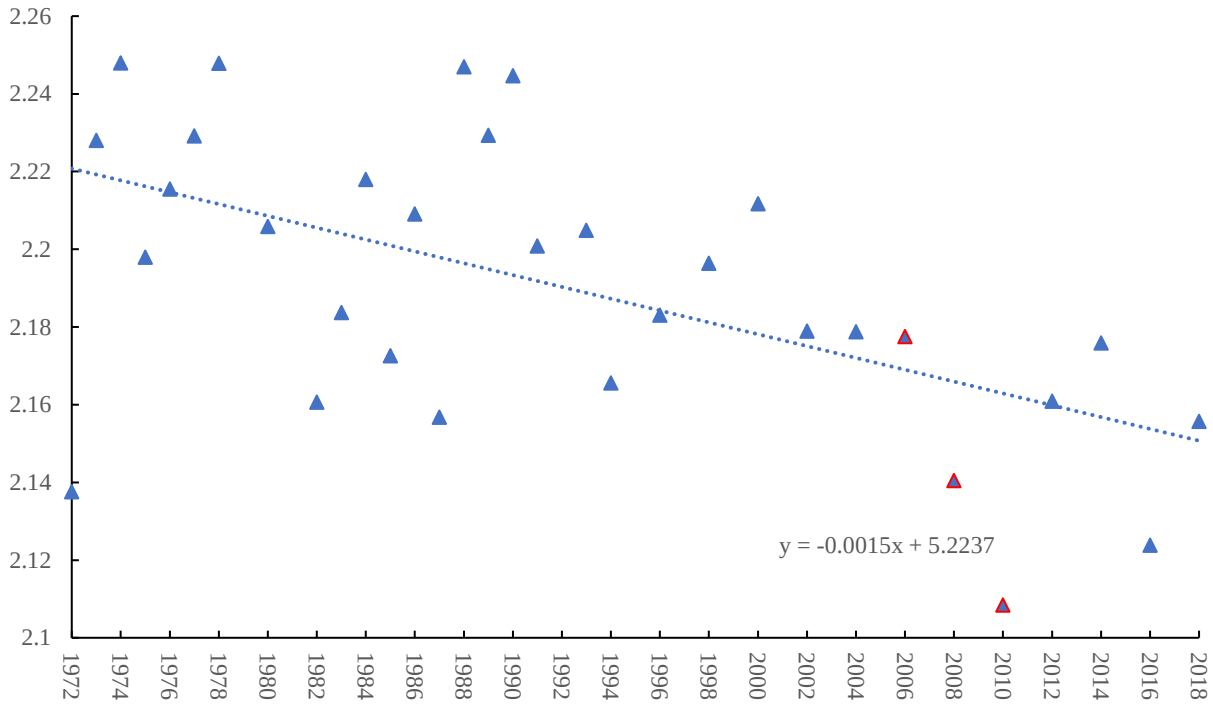


Chart 4. Despair in the USA, 1993-2020 (BRFSS)

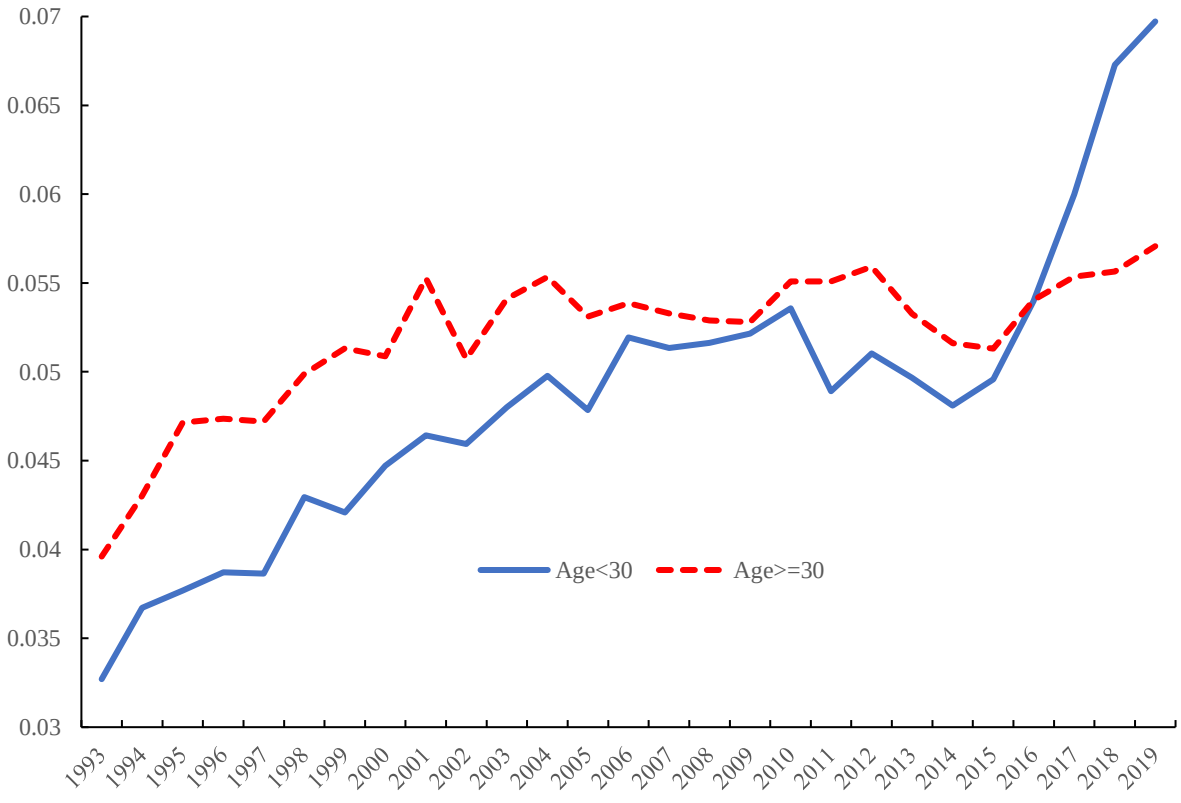
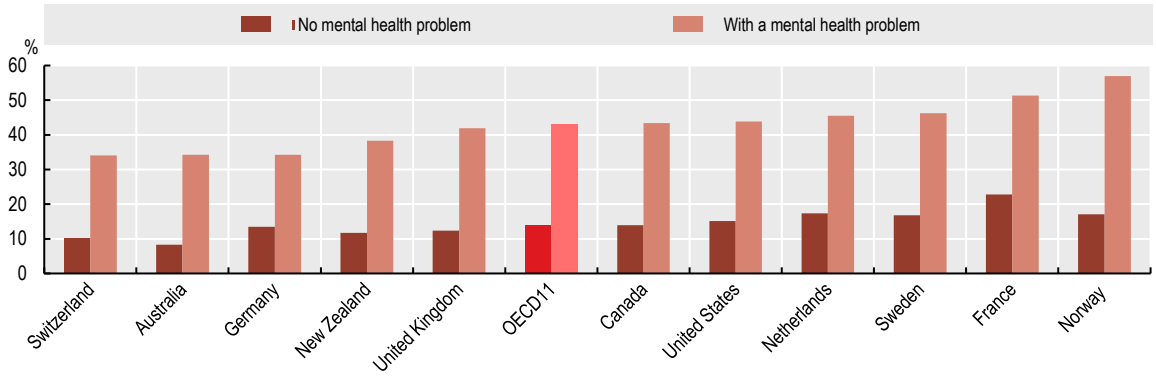


Chart 5. People whose health kept them from working full-time or limited their daily activities, 2016.



	No mental health problem	With a mental health problem
Switzerland	10.2	34.1
Australia	8.3	34.2
Germany	13.4	34.2
New Zealand	11.8	38.3
United Kingdom	12.3	41.9
OECD11	14.0	43.0
Canada	14.0	43.4
United States	15.1	43.9
Netherlands	17.3	45.5
Sweden	16.8	46.3
France	22.7	51.3
Norway	17.1	56.9
OECD11	14.0	43.0

https://www.oecd.org/health/health-systems/mental-health.htm

Chart 6 Anxiety, depression and worry, USA, 2020-2021

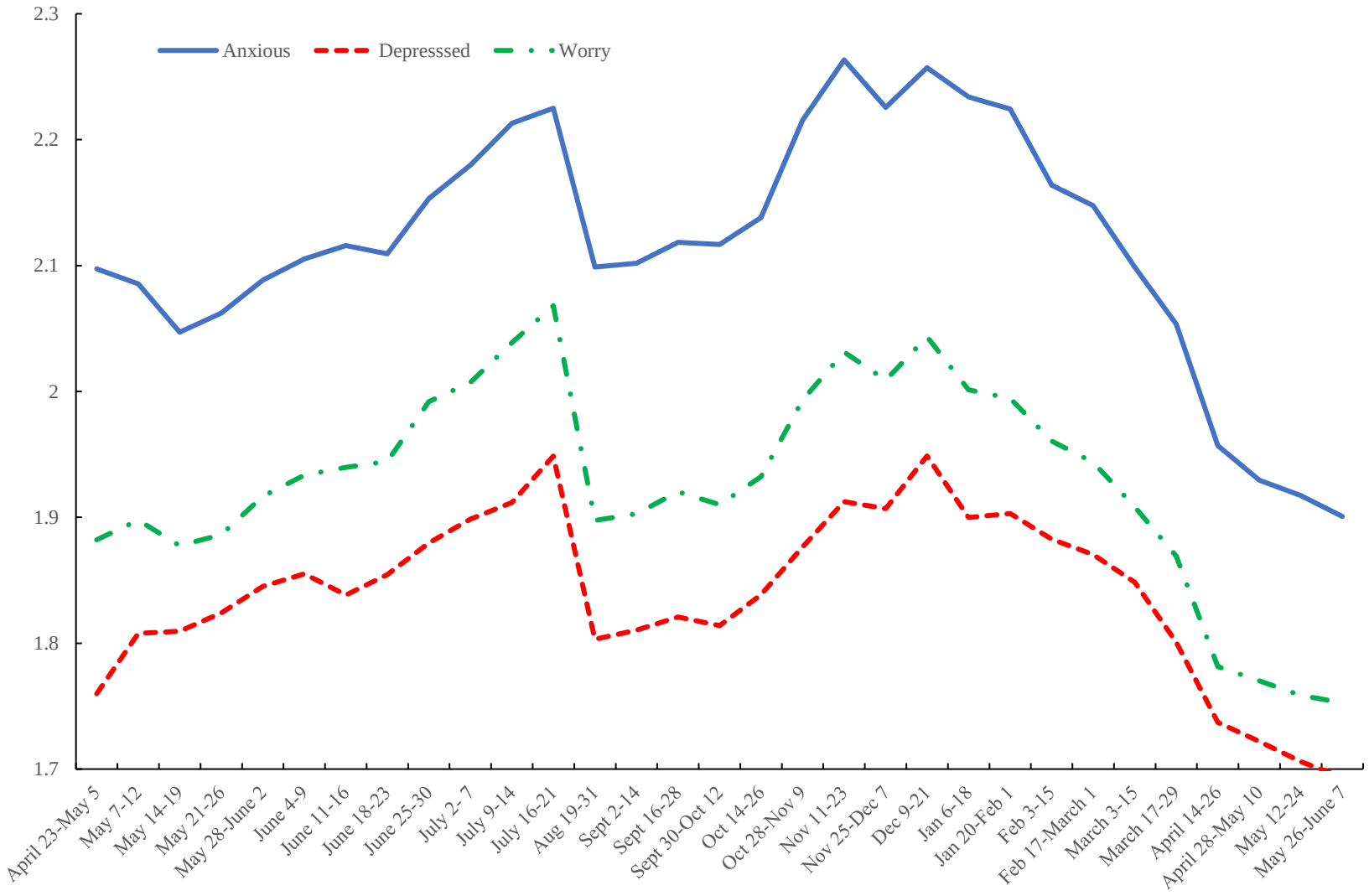
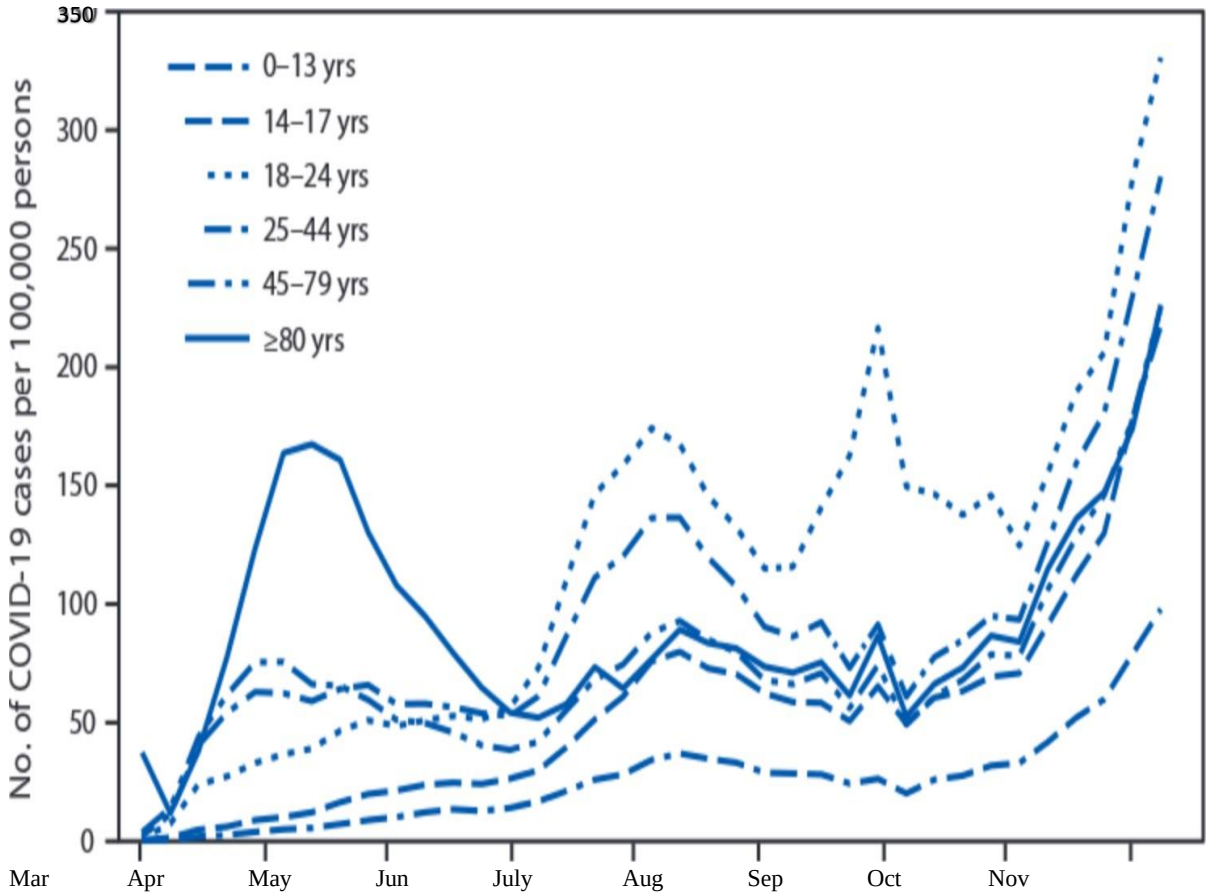


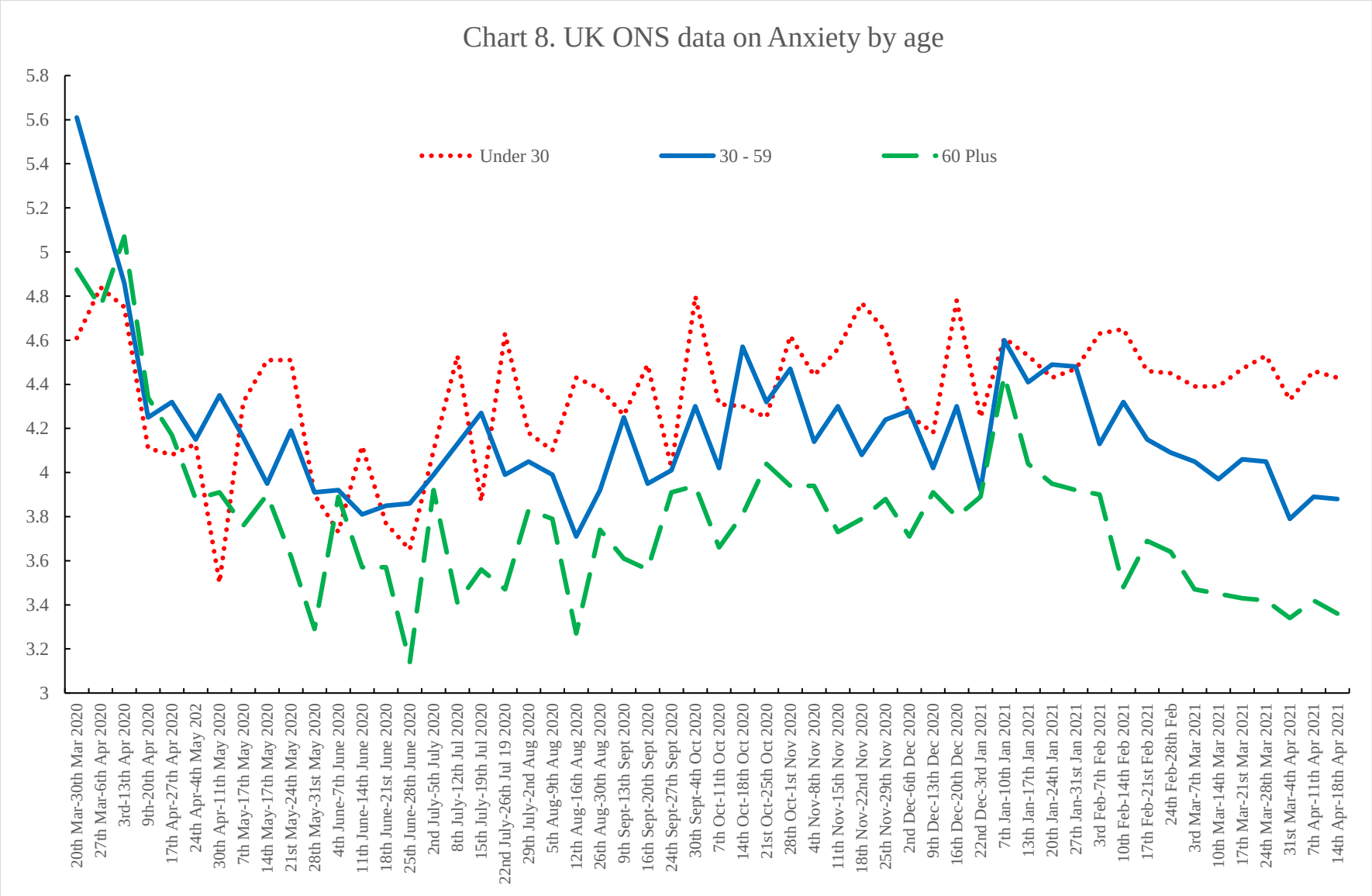
Chart 7. COVID Incidence by Age group, USA



* Incidence = cases per 100,000 calculated using 2019 U.S. Census population.

[t] Age data for COVID-19 cases are based on case report forms submitted by state and territorial jurisdictions for confirmed and probable cases. Reporting for some jurisdictions is incomplete. Age is missing for 1% of case reports.

COVID-19 Stats: COVID-19 Incidence, by Age Group — United States, March 1–November 14, 2020. MMWR Morb Mortal Wkly Rep 2021;69:1664. DOI: http://dx.doi.org/10.15585/mmwr.mm695152a8external icon.



Source Personal and economic well-being estimates by age group, across time, May 21st 2021, ONS
https://www.ons.gov.uk/peoplepopulationandcommunity/well-being/datasets/agegroupsplitestimatesonpersonalandeconomicwell-beingacrosstime

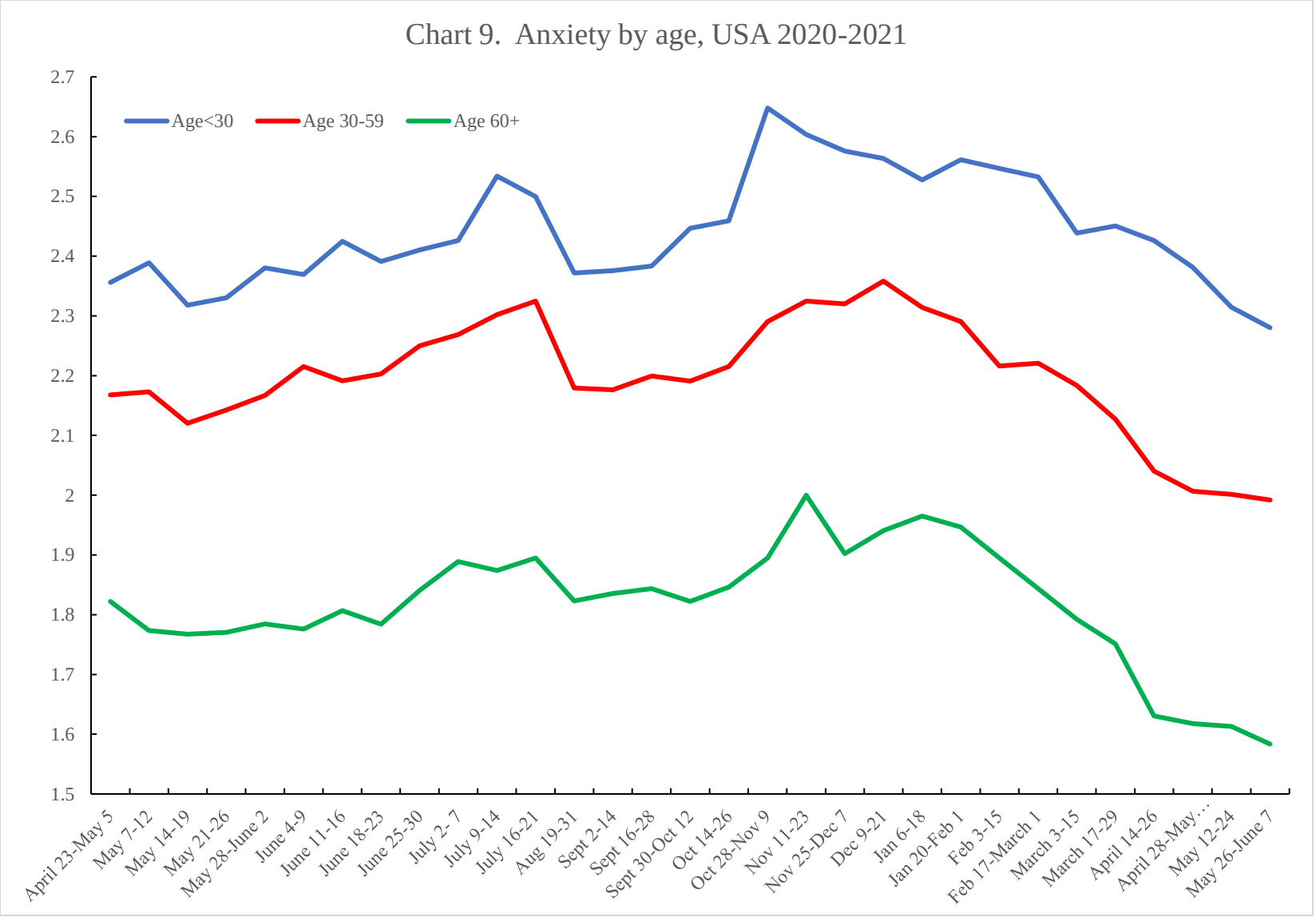


Chart 9. Anxiety by age, USA 2020-2021
Age<30
Age 30-59
Age 60+
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
April 23-May 5
May 7-12
May 14-19
May 21-26
May 28-June 2
June 4-9
June 11-16
June 18-23
June 25-30
July 2- 7
July 9-14
July 16-21
Aug 19-31
Sept 2-14
Sept 16-28
Sept 30-Oct 12
Oct 14-26
Oct 28-Nov 9
Nov 11-23
Nov 25-Dec 7
Dec 9-21
Jan 6-18
Jan 20-Feb 1
Feb 3-15
Feb 17-March 1
March 3-15
March 17-29
April 14-26
April 28-May…
May 12-24
May 26-June 7

Appendix Table 1. Covid cases and deaths, ranked by covid cases per 100k

State	Case counts	Cases per 100k	Reported deaths	Reported deaths per 100k
Wyoming*	2,209	381.68	28	4.84
Nevada*	10,507	341.12	106	3.44
Missouri*	20,286	330.53	279	4.55
Utah*	9,509	296.6	73	2.28
Arkansas*	8,704	288.42	76	2.52
Colorado	15,147	263.03	306	5.31
Louisiana*	11,350	244.15	172	3.7
Washington	16,747	219.92	187	2.46
Arizona*	13,897	190.93	311	4.27
Montana*	1,992	186.38	53	4.96
Oregon	7,359	174.48	107	2.54
Texas*	48,452	167.1	888	3.06
Idaho*	2,986	167.09	75	4.2
Kentucky*	7,055	157.91	157	3.51
Indiana*	10,628	157.87	240	3.56
West Virginia*	2,810	156.8	105	5.86
Alabama*	7,578	154.55	206	4.2
Mississippi*	4,265	143.31	99	3.33
Alaska	1,042	142.44	8	1.09
Kansas*	4,109	141.04	80	2.75
New Mexico	2,808	133.92	80	3.82
Oklahoma*	5,008	126.56	149	3.77
North Carolina*	13,114	125.04	323	3.08
Georgia*	11,963	112.67	591	5.57
North Dakota*	774	101.57	16	2.1
Hawaii	1,380	97.47	18	1.27
Maine	1,274	94.78	34	2.53
Delaware	904	92.84	33	3.39
Ohio*	9,969	85.28	440	3.76
New Jersey	7,564	85.16	255	2.87
Michigan	8,300	83.11	637	6.38
Rhode Island	875	82.6	22	2.08
Iowa*	2,536	80.38	85	2.69
Pennsylvania	10,235	79.95	468	3.66
Illinois	10,010	78.99	464	3.66
South Carolina*	3,929	76.31	94	1.83
Minnesota	4,104	72.77	173	3.07
California	28,044	70.98	457	1.16
Tennessee*	4,756	69.64	127	1.86
New York	12,974	66.69	413	2.12
District of Columbia	464	65.75	9	1.28
New Hampshire	801	58.91	19	1.4
Virginia	5,026	58.88	233	2.73
Nebraska*	1,120	57.9	12	0.62
Connecticut	2,046	57.39	41	1.15

Wisconsin	3,320	57.02	278	4.77
Florida*	9,968	46.41	496	2.31
Massachusetts	3,104	45.03	125	1.81
Maryland	2,677	44.28	130	2.15
South Dakota*	370	41.82	24	2.71
Vermont	192	30.77	2	0.32

*=Trump state

https://www.nbcnews.com/news/us-news/current-state-covid-19-united-states-5-charts-n1273021?cid=sm_npd_nn_tw_ma