

Trends in mental health symptoms, service use, and unmet need for services among U.S. adults through the first 9 months of the COVID-19 pandemic

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Abstract

The COVID-19 pandemic has led to rising morbidity, mortality, and social and economic disruption, likely impairing mental health. The purpose of this study was to track trends in mental health symptoms, use of services, and unmet need for services among U.S. adults and to delineate variation across demographic strata. Data were drawn from the 2020 U.S. Household Pulse Survey from repeated cross-sectional online surveys collected between April 23 and November 23, 2020 from 1,483,378 US adults, weighted to represent the U.S. population. Survey respondents self-reported their symptoms of anxiety and depression, use of medication, counseling services, and unmet need for services. Reports of probable anxiety and depression rose significantly through the study period, to prevalence rates of 50% and 44%, respectively, by November 2020, rates six times higher than early 2019 U.S. norms. Use of prescription medication, counseling services, and unmet need for mental health services also rose significantly. Prevalence rates of probable mental health disorders were highest among young, less educated, single, female, Black and Hispanic respondents, with age and education disparities growing over cohorts. Young, female, and moderately educated respondents also reported higher unmet needs for services. Disparities in estimates of mental health disorders and mental health treatment indicate a striking disequilibrium between the potential need for and the use of mental health services during the COVID-19 pandemic. Rising mental health challenges are being borne largely by young, less advantaged people of color and women, with the potential for expanded interruptions to optimal functioning and societal recovery from COVID-19.

Keywords

COVID-19, Depression, Anxiety, Mental health treatment, Disparities

INTRODUCTION

Along with rising morbidity, mortality, and social and economic disruption, the COVID-19 pandemic also has brought a surge of mental health challenges. Stressors ranging from fear of illness, job and income loss, and social and educational disruptions have led to rising stress and social isolation [1]. Numerous single- or duo-wave surveys in spring and summer 2020 found increased levels of anxiety and depression in the USA and other countries [2–7]. One survey of U.S. adults, for example, found rates of serious psychological

Implications

Practice: Increased access to mental health services, particularly targeting young adults, women, and adults of color, are needed to address rising mental health challenges brought on by the COVID-19 pandemic.

Policy: Policy to help U.S. residents recover from the challenges driven by the COVID-19 pandemic must attend not only to elevated economic and physical health needs but also to rising mental health disorders and increased need for mental health services.

Research: Future research is needed to delineate factors producing increased mental health disorders in the face of the COVID-19 pandemic, with particular attention to malleable factors amenable to policy manipulation.

Lay Summary

The myriad stressors imposed by the COVID-19 pandemic have impaired mental health and well-being. Although evidence from early in the pandemic revealed elevated rates of mental health conditions, research has not documented whether psychological disorders have continued to rise as the pandemic has persisted. In this research, we assess data from nearly 1.5 million U.S. adults who participated in cross-sectional surveys each week from April through November 2020 to track trends in mental health disorder symptoms and services. Our results show that reports of anxiety and depression rose significantly from April to November 2020 to rates six times higher than in 2019. We also found evidence of growing unmet need for mental health services. Rising mental health challenges are being borne largely by young, less advantaged people of color and women. Growing disparities in mental health disorders and treatment raise concerns for psychological, social, and economic recovery from COVID-19.

distress of 14.2% in April and 13.0% in July 2020 [4], while a June 2020 survey found prevalence

rates of 24.3% for anxiety and 24.3% for depressive disorder, severely elevated compared to prior national norms [2].

Due to demographic disparities in the physical, economic, and social impacts of COVID-19, it is likely that mental health disparities may emerge as well. Indeed, recent work found that mental health challenges were heightened among younger adults, parents, Hispanic adults, and those of lower socioeconomic status early in the pandemic [1–3, 7, 8]. Evidence to date has focused primarily on point-in-time or short-term shifts in mental health, presenting data from spring and summer 2020. It is essential to consider whether early increases in mental health symptomatology have remained stable, have grown, or have declined through the ongoing pandemic. Identifying the demographic groups at highest risk for increased mental health symptomatology is also critical.

In addition to tracking levels of psychological distress, we also consider changes in the use of and unmet need for mental health services in order to inform public health initiatives and direct scarce resources. The COVID-19 pandemic led to guidelines to postpone nonessential medical services and screenings [9]. Research is beginning to assess the growing gaps in mental health treatment in the USA and internationally [10]. An April 2020 survey of 880 U.S. behavioral health organizations, for example, found that 93% had reduced services in response to COVID-19 [11]. An assessment of U.S. electronic health records determined that mental and behavioral health visits declined in March 2020 but dropped less than other types of medical visits and rebounded more quickly to near prepandemic levels by April 2020 [12]. It is essential to consider how changes in mental health care have evolved and to evaluate the prevalence of unmet need for mental health services.

In the current research, we assess repeated cross-sectional surveys of nationally representative samples of U.S. residents from the U.S. 2020 Household Pulse Survey conducted from April through November 2020 to track trends in mental health disorder symptoms, mental health care, and unmet need for care across the entirety of the pandemic to date. These data provide a far more expansive view of changing mental health needs in the U.S. population than prior short-term studies. The large and diverse sample also allows consideration of how trends vary across demographic strata. Based on prior evidence, we expected mental health disorder symptoms and unmet need for services to increase over time, with more stability in the use of mental health services. We further expected greater evidence of disorders and unmet need among less educated adults, people of color, and parents.

METHODS

Survey data

We drew data from all available cohorts of the 2020 Household Pulse Survey, conducted by the U.S. Census Bureau and other government agencies to track effects of COVID-19 on U.S. residents [13]. These data are publicly available through the U.S. Census bureau (<https://www.census.gov/programs-surveys/household-pulse-survey/datasets.html>). Pulse conducted online surveys with adults in American households across all 50 states and Washington, DC, in weekly or bi-weekly cross-sectional samples drawn from April 23 through July 21 (Phase 1), August 19 through October 26 (Phase 2), and October 28 through December 21, 2020 (Phase 3; data through November 23 were available for analysis). A small proportion of respondents repeated surveys for one or two additional weeks; we included each respondent's first survey only. Data were clustered into approximately 2 week cohorts, with a total sample of 1,483,378 unique respondents. Sample weights adjust for nonresponse and sampling stratification to produce estimates representative of the US adult population [13]. Our university institutional review board reviewed this study and considered it exempt.

Mental health reports

Respondents completed the widely used and validated Patient Health Questionnaire for Depression and Anxiety [14], encompassing the two-item Generalized Anxiety Disorder Screener (GAD-2) [15] to report symptoms of anxiety (“feeling nervous, anxious, or on edge”; “not being able to stop or control worrying,” summed) and the two-item Patient Health Questionnaire (PHQ-2) [16] to report symptoms of depression (“feeling down, depressed, or hopeless”; “having little interest or pleasure in doing things,” summed) in the past week (0 “not at all” to 3 “nearly every day”). Based on validation studies [14–16], responses ≥ 3 were delineated as clinically significant indicators of likely anxiety disorder and depressive disorder, respectively. Starting in Phase 2, respondents also reported whether (yes/no) in the past 4 weeks they took prescription medication for mental health needs; received counseling or therapy from a mental health professional; and needed but did not receive counseling or therapy from a mental health professional, questions drawn from the National Health Interview Survey (NHIS).

Demographics

Respondents reported on their birth year (coded into age cohorts of 18–29; 30–39; 40–49; 50–59; 60–69; and 70+), sex (male or female), race and ethnicity (coded non-Hispanic White; non-Hispanic Black; non-Hispanic Asian; non-Hispanic other; or

Hispanic of any race), family structure (coded single adult; multiple adults; single adult with child(ren); multiple adults with child(ren)), and educational attainment (coded high school degree or less; some college; bachelors degree; or graduate degree). Missing demographic data were imputed using hot deck imputation by the U.S. Census Bureau [13]. State of residence was also recorded.

Statistical analyses

To assess trends over time in mental health symptoms and treatment, we conducted logistic regression models on each of the five mental health measures using Stata version 16.1. All models included age, sex, race/ethnicity, family structure, and education; cohort indicators to assess shifts over time; state indicators to adjust for geographic differences; and clustered standard errors to properly estimate variances. We then interacted each set of demographic variables with the cohort indicators to assess whether time trends varied across subgroups of the U.S. population, assessing the omnibus significance of each set of interactions using Wald tests. Two-tailed significance tests were employed, adjusted for multiple comparisons with Bonferroni corrections (thus considering $p < .01$ as statistically significant). All analyses incorporated population weights to make the samples nationally representative [13].

RESULTS

Table 1 presents weighted sample descriptives. Table 2 presents odds ratios (OR), 95% confidence intervals (CI), and predicted prevalence rates for anxiety and depression, with Fig. 1 presenting prevalence rates across the sample cohorts. Predicted prevalence rates were adjusted for all covariates and computed at the observational level (e.g., to compute predicted rates for males, each male's predicted probability was computed given his other covariates, then the probabilities were averaged over all males, similar to average marginal effects). Table 3 and Fig. 2A show ORs, 95% CIs, and predicted prevalence rates for the prescription, counseling, and unmet need for counseling outcomes for the entire sample, with these models re-estimated for 48.1% of the full sample who screened positive for anxiety and/or depression, with results presented in Table 4 and Fig. 2B. Results for interaction models, including ORs and 95% CIs for each interaction term as well as the χ^2 (df) and p value for each set of interactions, are presented in Supplementary Tables e5–e9. In describing the results in text, we focus on adjusted prevalence rates for ease of interpretability and practical significance.

Anxiety

Over the entire weighted sample, 44% of respondents screened positive for anxiety disorder. Results from logistic regressions indicate significant growth

in anxiety from early April through November (Table 2 and Fig. 1), with prevalence rising from 38% for the first cohort (April 23–May 12, 2020) to 50% in the final cohort (November 11–23, 2020). Prevalence varied significantly by race/ethnicity, with anxiety higher among people identifying as other racial/ethnic groups (51%), Hispanic (50%), and Black (47%) compared to Whites (41%), who were higher than Asians (39%). Interactions between race/ethnicity and wave were significant as a group (Supplementary Table e5), with gaps between Hispanics and Whites narrowing and gaps between Asians and Whites growing across some cohorts.

Rates of probable anxiety were significantly higher among younger adults, with the prevalence among those aged 18–29 (57%) nearly double that of those aged 70 and above (30%). Significant interaction results (Supplementary Table e6) found that age disparities grew over the cohorts, with anxiety prevalence rising most quickly for young adults. Females had significantly higher prevalence of probable anxiety than males (47% vs. 40%), and single adults with child(ren) (51%) had higher prevalence than those in adult-only households (42%). Nonsignificant interactions showed stable sex and household structure differences over cohorts (Supplementary Tables e7 and e8). Anxiety prevalence was significantly higher among those with lesser education, ranging from 47% for those with a high school degree or less to 35% for respondents with a graduate degree. Significant interactions found that educational disparities grew in May and then stabilized (Supplementary Table e9).

Depression

Over the entire analytic sample, 38% of respondents screened positive for depressive disorder. Prevalence of probable depression grew significantly over the cohorts (Table 2 and Fig. 1) from 32% in late April/early May to 44% in mid November. Respondents identifying as other racial/ethnic backgrounds (45%), Hispanics (44%), and Blacks (43%) reported higher prevalence of probable depression than Whites (35%), with some narrowing of gaps between Hispanics and Whites across cohorts. Depression was higher among younger respondents, with prevalence for 18–29 year olds (52%) nearly twice as high as those for 70+ (27%). Age disparities grew significantly over time: a 20 point gap in the first cohort (42% vs. 22% for 18–29 vs. 70+) rose to a nearly 30 point gap by the final cohort (61% to 32%). Females reported higher prevalence of depression than males (39% vs. 37%), with nonsignificant shifts over cohorts. Prevalence of depression differed across all household structures, with respondents living with other adults reporting the lowest prevalence of depression, and single adults with child(ren) the highest prevalence at 45%, differences

Table 1 | Weighted sample descriptives from the U.S. Household Pulse Survey, $N = 1,483,378^a$

	Weighted %		Weighted %
Mental health outcomes		State	
Anxiety	43.8%	Alabama	1.5%
Depression	37.9%	Alaska	0.2%
Prescription medication	20.1%	Arizona	2.2%
Counseling services	9.4%	Arkansas	0.9%
Unmet need for services	10.3%	California	12.2%
Race/ethnicity		Colorado	1.8%
White, non-Hispanic	61.2%	Connecticut	1.1%
Black, non-Hispanic	12.1%	Delaware	0.3%
Asian, non-Hispanic	5.2%	District of Columbia	0.2%
Other, non-Hispanic	3.8%	Florida	6.9%
Hispanic	17.7%	Georgia	3.2%
Age		Hawaii	0.4%
18–29	19.4%	Idaho	0.5%
30–39	19.1%	Illinois	3.8%
40–49	16.6%	Indiana	2.0%
50–59	16.7%	Iowa	0.9%
60–69	16.6%	Kansas	0.8%
70+	11.6%	Kentucky	1.3%
Sex		Louisiana	1.4%
Male	48.5%	Maine	0.4%
Female	51.5%	Maryland	1.8%
Household structure		Massachusetts	2.1%
Adults only	51.9%	Michigan	3.0%
Single adult	7.8%	Minnesota	1.7%
Single w/child(ren)	2.9%	Mississippi	0.9%
Adults w/child(ren)	37.4%	Missouri	1.8%
Education		Montana	0.3%
HS or below	40.4%	Nebraska	0.6%
Some college	30.5%	Nevada	1.0%
Bachelors	16.5%	New Hampshire	0.4%
Graduate degree	12.6%	New Jersey	2.7%
Cohort		New Mexico	0.6%
23 Apr–12 May	9.7%	New York	5.9%
14–26 May	8.0%	North Carolina	3.2%
28 May–9 Jun	8.5%	North Dakota	0.2%
11–23 Jun	8.7%	Ohio	3.5%
25 Jun–7 Jul	8.6%	Oklahoma	1.2%
9–21 Jul	8.8%	Oregon	1.3%
19–31 Aug	6.8%	Pennsylvania	3.9%
2–14 Sep	6.8%	Rhode Island	0.3%
16–28 Sep	6.8%	South Carolina	1.6%
30 Sep–12 Oct	6.8%	South Dakota	0.3%
14–26 Oct	6.8%	Tennessee	2.1%
28 Oct–9 Nov	6.8%	Texas	8.6%
11–23 Nov	6.8%	Utah	0.9%
		Vermont	0.2%
		Virginia	2.6%
		Washington	2.3%
		West Virginia	0.6%
		Wisconsin	1.8%
		Wyoming	0.2%

^aExcept reports of prescription medication ($n = 528,615$), counseling ($n = 528,586$), and unmet need for counseling ($n = 528,925$).

Table 2 | Weighted logistic regression models predicting anxiety and depression

	Anxiety		Depression	
	OR (95% CI)	Pred. rate	OR (95% CI)	Pred. rate
Race/ethnicity				
White, non-Hispanic	Ref	0.414	Ref	0.349
Black, non-Hispanic	<i>1.093 (1.061–1.126)</i>	0.470	<i>1.229 (1.192–1.267)</i>	0.430
Asian, non-Hispanic	<i>0.835 (0.799–0.872)</i>	0.388	<i>1.020 (0.975–1.067)</i>	0.354
Other, non-Hispanic	<i>1.308 (1.252–1.367)</i>	0.512	<i>1.344 (1.285–1.406)</i>	0.446
Hispanic	<i>1.103 (1.070–1.137)</i>	0.496	<i>1.155 (1.120–1.191)</i>	0.442
Age				
18–29	Ref	0.565	Ref	0.520
30–39	<i>0.738 (0.716–0.761)</i>	0.480	<i>0.656 (0.636–0.677)</i>	0.399
40–49	<i>0.626 (0.607–0.646)</i>	0.444	<i>0.556 (0.539–0.574)</i>	0.367
50–59	<i>0.542 (0.526–0.559)</i>	0.415	<i>0.503 (0.488–0.520)</i>	0.353
60–69	<i>0.412 (0.399–0.426)</i>	0.355	<i>0.398 (0.385–0.411)</i>	0.306
70+	<i>0.316 (0.304–0.328)</i>	0.296	<i>0.339 (0.325–0.352)</i>	0.271
Sex				
Male	Ref	0.402	Ref	0.365
Female	<i>1.384 (1.360–1.408)</i>	0.471	<i>1.177 (1.156–1.199)</i>	0.393
Household structure				
Adults only	Ref	0.419	Ref	0.365
Single adult	<i>1.026 (1.002–1.051)</i>	0.407	<i>1.126 (1.098–1.155)</i>	0.374
Single w/child(ren)	<i>1.101 (1.059–1.145)</i>	0.506	<i>1.107 (1.064–1.152)</i>	0.447
Adults w/child(ren)	<i>0.978 (0.956–0.999)</i>	0.465	<i>0.940 (0.919–0.962)</i>	0.395
Education				
HS or below	Ref	0.467	Ref	0.43
Some college	<i>0.898 (0.879–0.918)</i>	0.460	<i>0.832 (0.814–0.850)</i>	0.403
Bachelors	<i>0.690 (0.675–0.706)</i>	0.394	<i>0.558 (0.545–0.571)</i>	0.309
Grad degree	<i>0.631 (0.616–0.646)</i>	0.347	<i>0.470 (0.458–0.482)</i>	0.252
Cohort				
23 Apr–12 May	Ref	0.377	Ref	0.318
14–26 May	<i>1.075 (1.023–1.129)</i>	0.403	<i>1.157 (1.098–1.218)</i>	0.36
28 May–9 Jun	<i>1.139 (1.088–1.193)</i>	0.417	<i>1.187 (1.131–1.245)</i>	0.366
11–23 Jun	<i>1.091 (1.039–1.146)</i>	0.406	<i>1.076 (1.022–1.133)</i>	0.343
25 Jun–7 Jul	<i>1.137 (1.086–1.190)</i>	0.414	<i>1.142 (1.088–1.199)</i>	0.355
9–21 Jul	<i>1.267 (1.211–1.326)</i>	0.441	<i>1.236 (1.178–1.297)</i>	0.373
19–31 Aug	<i>1.394 (1.335–1.455)</i>	0.452	<i>1.452 (1.387–1.520)</i>	0.397
2–14 Sep	<i>1.375 (1.316–1.436)</i>	0.449	<i>1.417 (1.353–1.484)</i>	0.392
16–28 Sep	<i>1.413 (1.351–1.478)</i>	0.455	<i>1.437 (1.370–1.506)</i>	0.395
30 Sep–12 Oct	<i>1.419 (1.356–1.485)</i>	0.456	<i>1.476 (1.407–1.548)</i>	0.401
14–26 Oct	<i>1.471 (1.404–1.541)</i>	0.464	<i>1.541 (1.468–1.618)</i>	0.410
28 Oct–9 Nov	<i>1.733 (1.645–1.826)</i>	0.502	<i>1.731 (1.639–1.827)</i>	0.435
11–23 Nov	<i>1.739 (1.657–1.825)</i>	0.503	<i>1.728 (1.643–1.817)</i>	0.436
Constant	<i>0.944 (0.879–1.013)</i>		<i>0.943 (0.876–1.014)</i>	
Observations	1,483,378		1,483,378	

Models also adjust for state of residence. ORs and CIs in italics significant at $p < .01$. CI confidence intervals; OR odds ratio.

which remained stable over cohorts. Depression declined with greater education, with prevalence dropping from 43% for those with a high school degree or less to 25% for respondents with a graduate degree. Education disparities grew over time, with the greatest growth in depression over cohorts among the least educated.

Use of prescription medication

Across the entire sample, 21% of respondents reported using prescription medication for emotional, behavioral, or mental health disorders in the prior month. Logistic regression models found that prevalence of medication use grew over time, particularly in late October and through November, ranging from

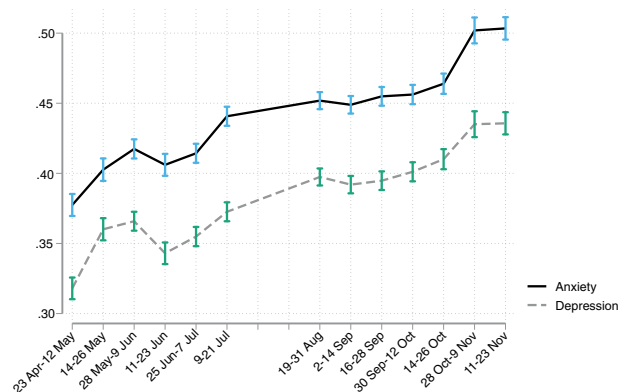


Fig 1 | Adjusted prevalence (with 95% confidence intervals) of anxiety and depression, April–November 2020.

19% among the first cohort who reported on medication use in late August to 22% in mid November (Table 3 and Fig. 2). Medication use varied by race/ethnicity, with prevalence among Whites (23%) significantly higher than Hispanic (16%), Black (15%), and Asian (8%) respondents. Prevalence of medication use varied significantly by age, ranging from a low of 17% among respondents aged 70 and above to a high of 22% among those in their 50s. Females reported significantly higher medication use than males (25% vs. 15%). Adults living alone reported higher medication use (23%) than those in multiple adult households (20%), who, in turn, were higher than those in households with adults and child(ren) (19%). In relation to education, respondents with some college reported significantly higher prevalence of medication use (22%) than those with a high school degree or less (19%). Sets of interactions were all nonsignificant, showing stable demographic differences across cohorts.

Mental health counseling

Over the whole sample, 9% of respondents reported accessing mental health counseling in the prior month. Logistic regression results (Table 3; Fig. 2) found that prevalence increased over the cohorts, rising to 10% in mid October and November. Prevalence rates of mental health counseling were lower among Asian (6%), Black (9%), and Hispanic (9%) respondents than their White (10%) counterparts. Prevalence varied significantly by age as well, with 13% of 18–29 year olds reporting counseling, more than three times higher than among respondents age 70 and above (4%). Females were more likely than males to receive counseling (11% vs. 7%), as were those in single adult (11%) or single adult with child(ren) (13%) households compared to those living with other adults (9%). Prevalence of mental health counseling was significantly lower among those with a high school degree or less (7%) than among their peers with some college (10%) or a bachelors or graduate degree (both 12%). Nonsignificant interactions indicated stable demographic differences across cohorts.

Unmet need for mental health counseling

Ten percent of the entire sample reported needing but not receiving mental health counseling services in the prior month. Logistic regression results (Table 3 and Fig. 2) found increasing prevalence over cohorts, rising from 9% in late August to 11% starting in late October. Prevalence of unmet need for counseling was highest among those identifying as other race/ethnicity (16%) and lowest among Asians (6%), both significantly different than Whites (10%). Unmet needs were higher among younger adults, with prevalence among young adults aged 18–29 (18%) over five times higher than among the oldest respondents aged 70 and above (3%). Females were more likely than males to report unmet need for mental health counseling (13% vs. 8%). Significant but practically small differences emerged across household structure, while differences across educational strata were larger, with all respondents with higher education reporting greater prevalence of unmet need for mental health services than their peers with a high school degree or less (8%), with the highest predicted rate (13%) among those with some college. Like other measures of mental health services, nonsignificant interactions indicated stable demographic differences across cohorts.

Use of medication, counseling, and unmet need for counseling among participants screening positive for anxiety and/or depression

A final set of analyses considered only those respondents who screened positive for probable anxiety disorder and/or depressive disorder, 48.1% of the sample (33.6% of the sample screened positive for both anxiety and depression). Using weighted chi-square analyses, we found that among those screening positive for anxiety and/or depression, 38.8% reported the use of prescription medication (vs. 15.1% among those not meeting criteria); 17.3% received counseling (vs. 5.0%), and 22.1% reported unmet need for counseling (vs. 2.8%), all significant comparisons ($p \leq .001$). Although the subsample screening positive for anxiety and/or depression reported significantly higher

Table 3 | Weighted logistic regression models predicting mental health services

	Prescription medication		Mental health counseling		Unmet need for counseling	
	OR (95% CI)	Pred. rate	OR (95% CI)	Pred. rate	OR (95% CI)	Pred. rate
Race/ethnicity						
White, non-Hispanic	Ref	0.228	Ref	0.097	Ref	0.099
Black, non-Hispanic	<i>0.531 (0.500–0.565)</i>	0.145	<i>0.832 (0.773–0.896)</i>	0.088	<i>0.998 (0.927–1.075)</i>	0.110
Asian, non-Hispanic	<i>0.332 (0.303–0.363)</i>	0.084	<i>0.427 (0.383–0.477)</i>	0.059	<i>0.467 (0.419–0.519)</i>	0.061
Other, non-Hispanic	<i>0.959 (0.888–1.035)</i>	0.225	<i>1.081 (0.977–1.196)</i>	0.117	<i>1.388 (1.275–1.511)</i>	0.156
Hispanic	<i>0.695 (0.658–0.735)</i>	0.162	<i>0.818 (0.761–0.880)</i>	0.089	<i>0.942 (0.878–1.011)</i>	0.114
Age						
18–29	Ref	0.191	Ref	0.134	Ref	0.178
30–39	<i>1.127 (1.065–1.193)</i>	0.203	<i>0.950 (0.892–1.013)</i>	0.131	<i>0.829 (0.780–0.882)</i>	0.146
40–49	<i>1.167 (1.104–1.233)</i>	0.208	<i>0.774 (0.726–0.826)</i>	0.106	<i>0.607 (0.569–0.647)</i>	0.110
50–59	<i>1.174 (1.111–1.239)</i>	0.219	<i>0.584 (0.546–0.625)</i>	0.086	<i>0.441 (0.412–0.472)</i>	0.088
60–69	<i>1.003 (0.949–1.060)</i>	0.207	<i>0.366 (0.340–0.394)</i>	0.059	<i>0.253 (0.236–0.273)</i>	0.055
70+	<i>0.755 (0.708–0.805)</i>	0.170	<i>0.221 (0.199–0.244)</i>	0.038	<i>0.140 (0.126–0.156)</i>	0.032
Sex						
Male	Ref	0.149	Ref	0.074	Ref	0.077
Female	<i>1.931 (1.873–1.991)</i>	0.250	<i>1.573 (1.510–1.640)</i>	0.112	<i>1.788 (1.712–1.868)</i>	0.126
Household structure						
Adults only	Ref	0.201	Ref	0.087	Ref	0.097
Single adult	<i>1.214 (1.170–1.260)</i>	0.232	<i>1.424 (1.356–1.495)</i>	0.110	<i>1.245 (1.182–1.311)</i>	0.104
Single w/ child(ren)	<i>1.065 (1.003–1.132)</i>	0.223	<i>1.279 (1.188–1.377)</i>	0.126	<i>1.010 (0.932–1.094)</i>	0.129
Adults w/ child(ren)	<i>0.907 (0.874–0.941)</i>	0.192	<i>0.884 (0.841–0.928)</i>	0.097	<i>0.830 (0.790–0.873)</i>	0.109
Education						
HS or below	Ref	0.186	Ref	0.066	Ref	0.083
Some college	<i>1.201 (1.155–1.248)</i>	0.223	<i>1.416 (1.332–1.505)</i>	0.101	<i>1.375 (1.298–1.456)</i>	0.126
Bachelors	<i>1.029 (0.990–1.071)</i>	0.199	<i>1.579 (1.486–1.678)</i>	0.116	<i>1.160 (1.094–1.229)</i>	0.110
Grad degree	<i>1.049 (1.008–1.092)</i>	0.198	<i>1.849 (1.740–1.965)</i>	0.120	<i>1.177 (1.108–1.249)</i>	0.095
Cohort						
19–31 Aug	Ref	0.194	Ref	0.087	Ref	0.092
2–14 Sep	<i>1.018 (0.973–1.066)</i>	0.196	<i>1.042 (0.978–1.110)</i>	0.091	<i>1.062 (0.997–1.132)</i>	0.097
16–28 Sep	<i>1.032 (0.986–1.081)</i>	0.198	<i>1.039 (0.975–1.107)</i>	0.090	<i>1.160 (1.085–1.240)</i>	0.104
30 Sep–12 Oct	<i>1.008 (0.962–1.057)</i>	0.195	<i>1.038 (0.975–1.106)</i>	0.090	<i>1.071 (1.004–1.141)</i>	0.097
14–26 Oct	<i>1.057 (1.006–1.111)</i>	0.202	<i>1.162 (1.083–1.246)</i>	0.100	<i>1.176 (1.095–1.263)</i>	0.106
28 Oct–9 Nov	<i>1.089 (1.029–1.152)</i>	0.208	<i>1.138 (1.057–1.226)</i>	0.098	<i>1.275 (1.182–1.376)</i>	0.112
11–23 Nov	<i>1.147 (1.089–1.209)</i>	0.216	<i>1.152 (1.072–1.236)</i>	0.099	<i>1.259 (1.173–1.351)</i>	0.111
Constant	<i>0.219 (0.196–0.244)</i>		<i>0.073 (0.062–0.088)</i>		<i>0.124 (0.107–0.143)</i>	0.092
Observations	528,615		528,586		528,925	

Models also adjust for state of residence. ORs and CIs in italics significant at $p < .01$.

CI confidence intervals; OR odds ratio.

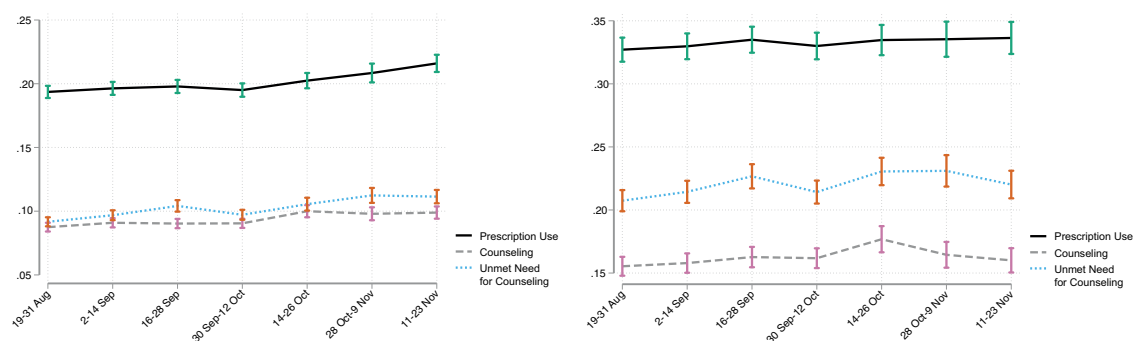


Fig 2 | Adjusted prevalence (with 95% confidence intervals) of prescription use, use of counseling services, and unmet need for counseling among full sample (A) and subsample screening for anxiety and/or depression (B), August–November 2020.

Table 4 | Weighted logistic regression models predicting mental health services among respondents reporting anxiety and/or depression

	Prescription medication		Mental health counseling		Unmet need for counseling	
	OR (95% CI)	Pred. rate	OR (95% CI)	Pred. rate	OR (95% CI)	Pred. rate
Race/ethnicity						
White, non-Hispanic	Ref	.381	Ref	.175	Ref	0.225
Black, non-Hispanic	<i>0.501 (0.461–0.545)</i>	.241	<i>0.809 (0.734–0.892)</i>	.146	<i>0.894 (0.822–0.972)</i>	<i>0.209</i>
Asian, non-Hispanic	<i>0.345 (0.304–0.392)</i>	.153	<i>0.517 (0.444–0.604)</i>	.115	<i>0.551 (0.484–0.627)</i>	<i>0.153</i>
Other, non-Hispanic	<i>0.891 (0.805–0.986)</i>	.342	<i>0.971 (0.855–1.104)</i>	.172	<i>1.247 (1.126–1.380)</i>	<i>0.275</i>
Hispanic origin	<i>0.671 (0.624–0.722)</i>	.258	<i>0.779 (0.711–0.855)</i>	.138	<i>0.898 (0.828–0.975)</i>	<i>0.214</i>
Age						
18–29	Ref	.269	Ref	.190	Ref	0.293
30–39	<i>1.282 (1.192–1.378)</i>	.308	<i>1.011 (0.933–1.096)</i>	.195	<i>0.913 (0.849–0.981)</i>	<i>0.267</i>
40–49	<i>1.443 (1.342–1.551)</i>	.333	<i>0.881 (0.811–0.956)</i>	.170	<i>0.715 (0.662–0.771)</i>	<i>0.219</i>
50–59	<i>1.648 (1.533–1.771)</i>	.375	<i>0.751 (0.689–0.818)</i>	.153	<i>0.584 (0.540–0.631)</i>	<i>0.194</i>
60–69	<i>1.620 (1.502–1.748)</i>	.387	<i>0.529 (0.480–0.582)</i>	.118	<i>0.396 (0.364–0.432)</i>	<i>0.145</i>
70±	<i>1.505 (1.367–1.658)</i>	.378	<i>0.391 (0.337–0.453)</i>	.093	<i>0.279 (0.245–0.317)</i>	<i>0.109</i>
Sex						
Male	Ref	.266	Ref	.139	Ref	0.185
Female	<i>1.689 (1.614–1.767)</i>	.381	<i>1.355 (1.281–1.433)</i>	.180	<i>1.477 (1.403–1.554)</i>	<i>0.246</i>
Household structure						
Adults only	Ref	.343	Ref	.161	Ref	0.220
Single person	<i>1.101 (1.044–1.163)</i>	.377	<i>1.292 (1.213–1.377)</i>	.186	<i>1.160 (1.092–1.232)</i>	<i>0.225</i>
Single with kids	<i>1.001 (0.920–1.088)</i>	.338	<i>1.221 (1.109–1.345)</i>	.195	<i>0.933 (0.850–1.025)</i>	<i>0.230</i>
Family with kids	<i>0.897 (0.852–0.944)</i>	.307	<i>0.902 (0.845–0.961)</i>	.157	<i>0.870 (0.821–0.922)</i>	<i>0.220</i>
Education						
HS or below	Ref	.313	Ref	.122	Ref	0.178
Some college	<i>1.221 (1.156–1.289)</i>	.354	<i>1.364 (1.265–1.471)</i>	.171	<i>1.411 (1.322–1.506)</i>	<i>0.255</i>
Bachelors	<i>1.066 (1.008–1.128)</i>	.327	<i>1.550 (1.437–1.673)</i>	.198	<i>1.303 (1.219–1.393)</i>	<i>0.244</i>
Grad degree	<i>1.072 (1.012–1.136)</i>	.343	<i>1.840 (1.704–1.988)</i>	.217	<i>1.335 (1.246–1.431)</i>	<i>0.228</i>
Cohort						
19–31 Aug	Ref	.327	Ref	.155	Ref	0.207
2–14 Sep	<i>1.018 (0.952–1.088)</i>	.323	<i>1.026 (0.944–1.115)</i>	.158	<i>1.051 (0.974–1.133)</i>	<i>0.214</i>
16–28 Sep	<i>1.051 (0.983–1.123)</i>	.335	<i>1.061 (0.975–1.154)</i>	.163	<i>1.127 (1.043–1.218)</i>	<i>0.227</i>
30 Sep–12 Oct	<i>1.019 (0.952–1.090)</i>	.330	<i>1.045 (0.962–1.136)</i>	.162	<i>1.035 (0.958–1.118)</i>	<i>0.214</i>
14–26 Oct	<i>1.038 (0.965–1.116)</i>	.335	<i>1.165 (1.061–1.279)</i>	.177	<i>1.140 (1.050–1.239)</i>	<i>0.231</i>
28 Oct–9 Nov	<i>1.029 (0.950–1.114)</i>	.336	<i>1.064 (0.966–1.171)</i>	<i>0.164</i>	<i>1.148 (1.049–1.256)</i>	<i>0.231</i>
11–23 Nov	<i>1.035 (0.960–1.116)</i>	.336	<i>1.046 (0.952–1.149)</i>	0.160	<i>1.089 (1.000–1.185)</i>	<i>0.220</i>
Constant	<i>0.377 (0.324–0.439)</i>		<i>0.122 (0.097–0.152)</i>		<i>0.277 (0.234–0.328)</i>	
Observations	190,359		190,355		190,397	

Models also adjust for state of residence. ORs and CIs in italics significant at $p \leq .01$. CI confidence intervals; OR odds ratio.

rates of use of prescriptions, counseling, and unmet need for counseling, logistic regressions predicting these three outcomes among this subsample, presented in [Table 4](#) and [Fig. 2B](#), show very similar patterns to those within the whole analytic sample with the exception that reported rates of prescription medication did not increase significantly over the cohorts among the subsample.

DISCUSSION

The COVID-19 pandemic has disrupted nearly all aspects of life, leading to rising mortality rates, increasing economic inequities, and gross disturbances in people’s daily lives and social interactions.

Perhaps not surprisingly, these myriad stressors have led to rising rates of mental health disorder symptoms, a trend that was already apparent by April 2020 [2, 7]. Tracking trends in mental health disorder symptoms as well as use of mental health services over the course of the pandemic is essential to understand broad effects of the COVID-19, inform public health initiatives, and identify subgroups of greatest concern.

Using nationally representative U.S. Household Pulse survey data from nearly 1.5 million U.S. residents between April and November 2020, this study provides essential new insights into these questions. Results found significant increases in positive screenings for anxiety through the first 8 months of

the pandemic, with adjusted prevalence rising from 38% to 50% between April and November 2020. By November, the prevalence of anxiety was over six times higher than national prevalence rates from January to June 2019 (8%) as reported in the NHIS survey [17]. Positive screenings for depression, which rose from 32% to 44% between April and November 2020, similarly were more than six times higher than national norms (7%) from early 2019 [17]. As such, these estimates present glaring evidence of growing mental health conditions and likely need for mental health services among U.S. residents.

Use of mental health services, including prescription medication and counseling services, also showed growth (albeit at a less rapid rate) between April and November 2020. Nationally, 22% of U.S. residents had taken medication and 10% had received counseling for mental health conditions in the prior month by November 2020. Among those screening positive for likely anxiety or depressive disorders, these rates were 34% and 16%, respectively. In contrast to mental health disorders, use of mental health services were less elevated in comparison to prior national norms (although different reporting periods prohibit exact comparisons). The 2019 NHIS surveys, for example, found that 16% of adults had used prescription medication and 10% had received counseling for a mental health disorder in the *prior year* [18].

Together, disparities in the estimates of mental health disorders and mental health treatment in 2020 indicate a striking disequilibrium between the potential need for and the use of mental health services. Indeed, by November 2020, 11% of respondents reported needing but not receiving mental health services in the prior month, with prevalence of 22% among those screening positive for anxiety and/or depressive disorders. These data provide direct evidence of a notable imbalance between meeting screening criteria for a mental health disorder and receiving treatment and indicate that a substantial proportion of people suffering from mental health symptoms neither receive treatment nor perceive an unmet need for mental health services. Such incongruences may derive from cultural norms and stigma around mental health care or perhaps from perceptions that feelings of anxiety and depression are temporary and even normative during the pervasive challenges of the pandemic. It is also important to acknowledge that the survey asked only about prescription medication and receipt of and need for services from mental health professionals; as such, the use or receipt of alternate sources of healing and support—such as from exercise, self-help apps, religious leaders, or other nonprofessional supports—were not assessed.

Results from this study also extend evidence on notable disparities in mental health disorders and services across key demographic strata. Most notably, Hispanics, Blacks, and those identifying as other race/ethnicity and those with a high school

degree or less reported elevated prevalence of probable anxiety and depression in comparison to their White and more educated peers but were significantly less likely to be receiving medication or counseling. In contrast, Asian Americans showed a dissimilar pattern, reporting lower rates of anxiety than Whites, as well as distinctly lower use of prescriptions, counseling, and perceived unmet need for services, replicating patterns from prior studies [19, 20]. Females and single parents also reported heightened prevalence of probable anxiety and depression, as well as heightened prevalence of service receipt, although these groups still reported higher prevalence of unmet need for mental health counseling as well. Finally, young adults, those aged 18–29, screened positive for anxiety and depression at nearly twice the rate of older adults, and although the former were more likely to be receiving counseling, they also reported unmet need for such services at six times the prevalence of older adults. These patterns extend prior evidence of such disparities [1–3, 7, 8], highlighting growth in age and educational disparities in mental health symptoms as the pandemic progressed.

Together, the results provide the latest national evidence of striking increases in mental health challenges in the face of the COVID-19 pandemic, challenges borne largely by young, less advantaged people of color and women. Disparities between prevalence rates of probable mental health disorders and receipt of services suggest that a substantial portion of U.S. residents experiencing mental health symptoms are not receiving necessary services, with the potential for expanded interruptions to optimal functioning and related repercussions for social and economic recovery from the COVID-19 pandemic.

In interpreting these results, it is essential to acknowledge limitations, including cross-sectional data, brief (albeit validated) mental health screeners which do not specify clinical diagnoses, and online surveys, which may miss key populations (particularly the most disadvantaged populations lacking internet access) and lead to underreporting of mental health symptoms [13]. Beyond these key limitations, results suggest a growing mental health crisis driven by the COVID-19 pandemic. Assessing specific drivers of these increased mental health challenges derived from illness, financial, and social stressors will help to elucidate the potential for larger-scale policy interventions. Greater evaluation of new modes of treatment, such as teletherapy, which has grown dramatically in popularity during pandemic shutdowns [18] and the rapidly expanding range of mental health apps [21], will help to direct future clinical service responses.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Translational Behavioral Medicine* online.

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Compliance with Ethical Standards

Conflicts of Interest: The authors declare that they have no conflicts of interest.

Ethical Approval: Through analysis of existing, deidentified data, this article does not contain any studies with human participants performed by any of the authors. The Boston College Institutional Review Board reviewed this study and considered it exempt. This article does not contain any studies with animals performed by any of the authors.

Informed Consent: Through analysis of existing, deidentified data, the authors did not involve human participants nor acquire informed consent.

Study registration: This study was not formally registered.

Analytic plan preregistration: The analysis plan was not formally preregistered.

Data availability: Deidentified data from this study are available in a public archive: <https://www.census.gov/programs-surveys/household-pulse-survey/datasets.html>.

Analytic code availability: Analytic code used to conduct the analyses presented in this study are not available in a public archive. They may be available by emailing the corresponding author.

Materials availability: All materials used to conduct the study are available in a public archive: <https://www.census.gov/programs-surveys/household-pulse-survey/technical-documentation.html>.

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