Journal of Racial and Ethnic Health Disparities
https://doi.org/10.1007/s40615-021-01188-0

COVID-19, Police Violence, and Educational Disruption: The Differential Experience of Anxiety for Racial and Ethnic Households

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Received: 16 August 2021 / Revised: 4 November 2021 / Accepted: 5 November 2021

Abstract

Background The threat of a deadly pandemic, racial tension, recessionary economic circumstances, and educational disruption likely contributed to the heightened anxiety felt by many Americans in 2020. This study examines the differential anxiety experienced by Black, White, and Hispanic households with and without children during 2020.

Method Data from the Census Bureau's Household Pulse Survey detailing the frequency of anxiety among a nationally representative sample of adults from April 23 to December 21, 2020, was coupled with Centers for Disease Control and Prevention records of COVID-19 diagnoses and state-level police killings. Multinomial logistic regression assessed the relative contribution of COVID-19 deaths, police violence, unemployment, fear of unemployment, change in educational delivery, and geographic location to anxiety among racial/ethnic cohorts with and without children.

Results Anxiety frequency increased over the sample for all groups. However, White anxiety was highly responsive to state-level COVID-19 fatalities, while Black anxiety was highly correlated with police violence. Households with children showed higher levels of anxiety during nontraditional educational delivery, whereas both households with and without children experienced high levels of fear regarding employment uncertainty and poverty.

Conclusions Experiences in 2020 impacted all groups differently, but each showed a high frequency of anxiety.

Keywords COVID · Police violence · Educational disruption · Black · Anxiety

Introduction

The year 2020 ushered in an unprecedented level of worldwide disruption and uncertainty as the coronavirus disease 2019 (COVID-19) spread across the globe [1]. The extensive reach of the pandemic impacted nearly every facet of society resulting in economic instability, pervasive illness and mortality, and social disruption [2–6]. Nationally, the uncertainty of 2020 was compounded for people in the USA as they experienced political divisiveness and racial unrest comprised of protests, riots, and police brutality [7–9]. Despite the nationwide uncertainty that was shared by virtually every American, inequality in the economic and health effects of the pandemic has been observed for those of different racial and ethnic groups [10–13]. To characterize the uncertainty experienced in 2020, we must identify overlapping and unique factors related to anxiety reported within different racial and ethnic groups.

Early in the COVID-19 pandemic, misinformation and rapidly evolving public health guidelines were a source of insecurity for many Americans [14, 15]. Political leaders and scientists contributed to the confusion by providing, at times, conflicting information on the severity of the virus, the necessity of reducing transmission, infection risk, and treatment [16–18]. As COVID-19 reached pandemic proportions, individuals vulnerable to mental illness experienced an increase in post-traumatic stress symptoms, depression, sleep disturbances, substance use, and attempted suicide [19–24]. Even among adults without a history of mental health conditions, the trauma inflicted by the pandemic has led to an increase in psychological distress. A survey of 9687 adults participating in the Pew Research Center's American Trends Panel found that more than a quarter of respondents suffered distress in the form of anxiety, sleep disturbance, depression, or hyperarousal [25]. Pre-pandemic circumstances, including economic and social support, as well as

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Published online: 01 December 2021

individual factors such as race, ethnicity, sex, and age, are likely to influence the level of anxiety experienced as a result of COVID-19. Studies have found being female, White non-Hispanic, reporting financial uncertainty, and loneliness are risk factors associated with greater mental distress, while those who are older, employed, or of Asian American or Hispanic/Latino descent were less likely to report pandemic-related mental distress [25–30].

Extensive media coverage of police violence and subsequent social unrest was another source of heightened anxiety during 2020 [31, 32]. Contact with police, specifically police-related violence, is disproportionately experienced by minority communities. In the USA, police shootings of unarmed Black residents are 3.5-fold greater than shootings of unarmed White residents [33]. Among individuals associated with a police-involved fatality between 2012 and 2018, Black men had an estimated risk between 1.9 and 2.4 deaths per 100,000 annually while White men had an estimated risk between 0.6 and 0.7 with the risk for Hispanic men falling in between (0.8–1.2) [34]. Although the majority of police-involved fatalities result in the death of an adult, minority children residing close to the location of violence are absent from school in the days following the killing and experience decreases in educational attainment [35]. Given the detrimental impact of police violence on children [36], caregivers living in proximity to police-related killings that occurred during 2020 may be at an increased risk for anxiety.

An additional source of anxiety for households with children was the extensive school closures intended to keep students safe from the spread of COVID-19. Over the course of 2020, the United Nations Educational, Scientific and Cultural Organization estimated that 1.6 billion students globally experienced educational disruptions [37]. As schools shut down for an average of 3.5 months in response to isolation mandates, remote learning was adopted by many school districts, leaving caregivers to become pseudo-educators [38]. The success of remote learning is largely dependent on access to technology and caregiver involvement. Computer ownership, a significant factor in the so-called digital divide, is more likely in households where residents were White, employed, and lived above the poverty level [39, 40]. Furthermore, Americans living in rural areas and those in racial/ethnic minority groups are disproportionately represented among the approximately 18 million people in the USA who lack Internet access [41–44]. Attempting to manage the educational needs of children, while lacking the resources to facilitate remote learning, could be a reason for the significantly higher levels of stress seen among adults with children during the pandemic compared to those without children [45]. Lee and colleagues found that parents' perceived ability to provide at-home education, including access to resources, was related to increased depression and stress [46].

Notwithstanding the novel stress brought on directly by COVID-19, namely, a global public health crisis, the pandemic also magnified and, in some instances, compounded other adverse life events. Over the last year, loss of employment, job insecurity, and poverty were significant sources of stress for many Americans [30, 47, 48]. Although racial inequality in employment is not novel [49, 50], the COVID-19 pandemic has intensified the divide, leaving minority communities to disproportionately endure the burden of unemployment. Early in the pandemic, Blacks experienced an average unemployment rate of 16.6% compared to 12.8% for Whites; yet, the highest level of unemployment during this time was seen for Hispanics (18.2%) [11]. For Whites and Hispanics, subsequent months brought some recovery with unemployment declining by 3.6 and 8.3% points, respectively. However, among Blacks, unemployment fell by less than 2% (1.5%) [11]. Likewise, drastic increases are reported in the representation of Blacks and Hispanics (odds ratios of 1.64 and 2.84, respectively) living in severe poverty—defined as surviving on less than $2.00 per day [51, 52].

The current study examined the effects of various stressors including COVID-19 mortality, police violence, and economic disruption that may result in a differential effect in the experience of anxiety among Blacks, Whites, and Hispanics. In addition, we investigate households with and without children to further extrapolate the effect of education disruption on the level of anxiety experienced during 2020.

Methods

Data

HHPS

Data from this study was drawn from the first 21 weeks of the Household Pulse Survey (HHPS)—a quick deployment data collection instrument designed to collect data on a range of ways in which people's lives have been impacted by the COVID-19 pandemic [53]. The result of a collaboration between the US Census Bureau and other federal agencies, the HHPS asked individuals about their experiences in terms of employment status, spending patterns, food security, housing, physical and mental health, access to health care, and educational disruption. The HHPS was conducted in three phases. Phase 1, which began on April 23, 2020, asked individuals about their experiences in terms of employment status, food security, housing, physical and mental health, access to health care, and educational disruption. Phases 2 and 3, beginning on August 19 and October 28, 2020, respectively, carried over many of these questions to allow users to understand how these domains changed as

the pandemic continued. The instrument utilized an overlapping weekly panel of respondents, each of whom was surveyed once per week for 3 consecutive weeks before being replaced by a new panel [53].

During the collection period, the Census Bureau sampled nearly 1.9 million and 1.0 million housing units in weeks 1 and 2 of the survey, respectively. An additional 1.1 million addresses were added each week thereafter to ensure that the survey remained representative of the US population. In total, the survey sampled approximately 13.8 million housing units collecting roughly 108,000 responses per week, for an approximate 5.0% response rate. Households were surveyed on basic demographic information including size, the birth year of the responding adult, sex, race, and ethnicity. While race, ethnicity, sex, and age were collected to ensure a representative sample, the educational attainment of the responding adult was also collected to align the final weighted distribution with the 2018 American Community Survey estimates of the adult population's educational attainment.

While some content varied between the three phases of the HHPS, this study utilized an instrument to measure anxiety that was present throughout the panel. Respondents indicated, "Over the last 7 days, how often have you been bothered by the following problems: feeling nervous, anxious, or on edge? Would you say not at all, several days, more than half the days, or nearly every day?" Response frequencies were translated into ordered response categories indicating frequency such that 0 = not at all, 1 = several days, 2 = more than half the days, and 3 = nearly every day. To capture labor market effects related to the pandemic, HHPS respondents were asked two labor market-related questions (referred to as "job loss" and "fear of job loss," respectively):

> Have you or has anyone in your household experienced a loss of employment income since March 13, 2020? Do you expect that you or anyone in your household will experience a loss of employment income in the next 4 weeks because of the coronavirus pandemic?

Household respondents indicate whether any child in the household was enrolled in a public school, enrolled in a private school, or educated in a homeschool setting in kindergarten through 12th grade or grade equivalent at any time during the 2020–2021 school year. Those households who responded affirmatively were then asked "How has the coronavirus pandemic affected how the children in this household received education for the 2020–2021 school year? Response choices included the following: classes normally taught in person at the school were canceled; classes normally taught in person moved to a distance-learning format using online resources, either self-paced or in real time; classes normally taught in person moved to a distance-learning format using paper materials sent home to children; classes normally taught in person changed in some other way; and there was no change because schools did not close. These survey items were used to create a binary indicator which assumed a value of one if the educational delivery format changed in any way and zero otherwise.

Finally, respondents classified their 2019 pre-tax income into one of eight categories: (1) less than $25,000, (2) $25,000–$34,999, (3) $35,000–$49,999, (4) $50,000–$74,999, (5) $75,000–$99,999, (6) $100,000–$149,999, (7) $150,000–$199,999, and (8) $200,000 and above. These categories along with the reported number of individuals residing in the household were used to create two indicators—poverty and low income. Poverty indicates households reported income below 100% of the 2020 Health and Human Services (HHS) Poverty earnings threshold for their household size. Low income indicates household reported income below 150% of the HHS Poverty earning threshold for their household size.

MPV Database

Racial tension during 2020 was prompted by several notable African American deaths at the hands of law enforcement. While it is not possible to account for the emotional, psychological, and social impact of these tragedies, this study includes the total number of police killings in each state during each week of the HHPS. Data was derived from the Mapping Police Violence (MPV) database. MPV sources information from three large, comprehensive databases on police killings: FatalEncounters.org, the US Police Shootings Database, and KilledbyPolice.net. In addition to compiling the information from these sources, MPV verifies data quality and completeness through verification by media outlets, obituaries, criminal records databases, and police reports and, when possible, includes additional information such as race, vehicular use, and armament status. Compared to other sources of police killings, such as the Washington Post Fatal Encounters database, MPV includes deaths that result from chokeholds, batons, tasers, or other means. This study matches respondents' state of residence and week of participating in the HHPS with the total number of police killings in their state during that time.

COVID-19 Deaths

To capture the severity of the COVID-19 pandemic in the respondents' local areas, COVID-19 Case Surveillance Public Use Data was obtained from the Centers for Disease Control and Prevention (CDC). The CDC recorded and archived daily numbers of confirmed cases and confirmed deaths for each state throughout the COVID-19 pandemic. Since each week of the HPS survey was conducted over a range of days, daily values for COVID-19 cases corresponding to the dates

of the survey week are averaged to calculate the state-level weekly average confirmed new COVID-19 deaths for inclusion in the regression model.

Empirical Estimation

Ordered logistic (OL) regression evaluated those factors related to anxiety among Blacks, Whites, and Hispanics during the 2020 COVID-19 pandemic. Anxiety was expressed as a discrete, numeric category value representing the frequency of anxiety (coded such that 0 = not at all, 1 = several days, 2 = more than half the days, and 3 = nearly every day). Dichotomous variables for the female sex, residing in a metropolitan statistical area (MSA), job loss, fear of job loss, poverty, and low income were included in the model. Age, week of the HHPS (ranging from 1 to 21), and the total number of people residing in the household were also added. To account for anxiety related to the pandemic and police violence, the total number of confirmed, new COVID-19 cases, and the total number of police killings for each state and week were also included. Finally, a binary variable for HHPS week 5 (May 28–June 2)—the week directly following the death of George Floyd—was included as an indicator of social unrest.

As those factors related to anxiety will likely vary between households with and without school-aged children, separate regression models were run for households containing individuals under age 18. Additionally, an indicator for those experiencing a change in learning format (i.e., classes normally taught in person were delivered via an alternative means) was included for households with children. Finally, separate regression models were run for Black, White, and Hispanic households to allow for variations among those factors related to anxiety frequency. To assess household variability among vulnerable populations, we also ran a full sample regression with racial and ethnic interaction terms.

Robustness Test

While separate regression models for Black, White, and Hispanic households provide easily interpretable estimates, similar anxiety among these racial and ethnic groups can also be estimated simultaneously. The inclusion of binary indicators for Black and Hispanic household tests for differences in the average anxiety level experienced by these groups over the sample period. To test the differential contribution of various elements to the anxiety experienced by these groups, interaction terms are also included between these racial/ethnic indicators and those factors hypothesized to be related to anxiety. An ordered logistic regression including these binary indicators and interactions is run to test the robustness of the subgroup models described above.

Results

Respondent Characteristics: Households with Children

Sample Characteristics Table 1 lists sample characteristics for Black, White, and Hispanic households with children (HHWC). On average, 60 to 75% of HHWC had a female between 40 and 45 years of age responding to the HHPS. These households have between 4 and 5 members. However, only about 25% of Whites live in MSAs compared to 43.21 and 45.75% of Blacks and Hispanics, respectively—a statistically significant difference ($\chi^2 = 13{,}130.3773$, $p < 0.0001$). Similarly, more Blacks (85.12%) and Hispanics (89.56%) live in the South than White (75.18) ($\chi^2 = 6487.0006$, $p < 0.0001$). Over 40% of Hispanics and Blacks report that they expect to lose their job due to the pandemic, compared to only 26% of Whites ($\chi^2 = 7498.0560 < 0.0001$). Fewer Whites (43.66%) than Blacks (54.96%) or Hispanics (57.09%) report that someone in their household has lost their job as a result of pandemic-related economic shifts. Likely related to job loss or insecurity, a smaller proportion of White households earn at the poverty (4.1%) or low-income threshold (21.1%) compared to Black (poverty: 13.9%, low-income: 49.49%) and Hispanic households (poverty: 8.53%, low-income: 43.90%) (poverty: $\chi^2 = 7163.3303$, $p < 0.0001$; low-income: ($\chi^2 = 23{,}183.3478$, $p < 0.0001$). However, similar percentages of White (94.50%), Black (97.52%), and Hispanic (96.76%) households with children were forced to change learning formats because of school closures/scheduling changes. But differences were statistically significant ($\chi^2 = 1006.6270$, $p < 0.0001$). While Blacks, Whites, and Hispanics report roughly similar percentages of anxiety frequencies; they do appear to differ statistically ($\chi^2 = 428.0222$, $p < 0.0001$).

Respondent Characteristics: Households Without Children

Sample Characteristics Table 2 lists sample characteristics for Black, White, and Hispanic households without children (HHWOC). All households are comprised of about two people. A significantly larger proportion of Black (65.89%) household respondents are female compared to White (56.75%) or Hispanic (56.23%) household respondents ($\chi^2 = 2409.3543$, $p < 0.0001$). White household respondents were significantly older (57.09) than Black (52.23) or Hispanic (49.49) respondents (t-stat = 4242.30, $p < 0.0001$). Much like HHWC, a larger proportion of Hispanic (46.22%) and Black (47.93%) HHWOC reside in MSAs than White

Table 1 Sample characteristics for Black, White, and Hispanic households with children

Variable means for households with children															
	Black					White					Hispanic				
	N	Mean	Std Dev	Min	Max	*N*	Mean	Std Dev	Min	Max	*N*	Mean	Std Dev	Min	Max
Anxiety frequency	42,536	1.23	1.08	0	3	303,146	1.24	1.07	0	3	49,684	1.31	1.06	0	3
HH members	42,624	4.18	1.53	1	10	303,547	4.20	1.27	1	10	49,768	4.49	1.53	1	10
Age	42,624	43.06	10.63	18	88	303,547	44.33	9.53	18	88	49,768	41.50	10.34	18	88
Week	42,624	9.98	5.60	1	21	303,547	10.51	5.75	1	21	49,768	10.54	5.64	1	21
Average COVID-19 deaths	42,624	105.73	247.29	0	999	303,547	104.57	231.30	0	999	49,768	58.54	183.30	0	999
Log average COVID-19 deaths	7820	6.22	0.61	1.95	6.91	80,134	5.53	1.14	1.95	6.91	6732	5.69	1.06	1.95	6.91
Average policy killings	42,624	0.87	1.45	0	12	303,547	0.72	1.38	0	12	49,768	1.49	2.10	0	12
Log average police killings	18,474	0.50	0.59	0	2.48	110,043	0.48	0.59	0	2.48	26,946	0.77	0.67	0	2.48
Variable frequencies for households with children															
Anxiety = 0 = not at all	12,998	30.56				88,169	29.08				12,635	25.43			
Anxiety = 1 = several days	14,835	34.88				111,351	36.73				18,970	38.18			
Anxiety = 2 = more than half days	6683	15.71				45,176	14.9				8031	16.16			
Anxiety = 3 = nearly every day	8020	18.85				58,450	19.28				10,048	20.22			
MSA	18,689	43.85				75,373	24.83				22,768	45.75			
Poverty	5932	13.92				12,547	4.13				4247	8.53			
Income	21,386	50.17				64,131	21.13				21,850	43.9			
Female	32,112	75.34				192,483	63.41				33,789	67.89			
School change format	40,682	97.46				283,638	94.5				47,142	96.76			
Job loss	23,603	55.44				132,422	43.66				28,386	57.09			
Expected job loss	17,361	40.83				79,299	26.16				20,773	41.84			
South	6124	14.37				75,338	24.82				5197	10.44			
May 29, 2020	2583	6.06				16,799	5.53				2775	5.58			

Table 2 Sample characteristics for Black, White, and Hispanic households without children

Variable means for households with no children															
	Black					White					Hispanic				
	N	Mean	Std Dev	Min	Max	*N*	Mean	Std Dev	Min	Max	*N*	Mean	Std Dev	Min	Max
Anxiety frequency	67,005	1.07	1.06	0	3	85,7628	1.04	1.06	0	3	72,112	1.25	1.09	0	3
HH members	79,261	2.09	1.26	1	10	952,219	2.05	1.07	1	10	84,130	2.32	1.26	1	10
Age	79,261	52.23	14.99	18	88	952,219	57.09	15.92	18	88	84,130	49.49	16.51	18	88
Week	79,261	10.79	5.67	1	21	952,219	10.71	5.77	1	21	84,130	10.93	5.69	1	21
Average COVID-19 deaths	79,261	85.52	225.79	0	999	952,219	93.95	222.68	0	999	84,130	55.25	180.18	0	999
Log average COVID-19 deaths	11,749	6.22	0.61	1.95	6.91	219,696	5.56	1.15	1.95	6.91	10,625	5.67	1.10	1.95	6.91
Average policy killings	79,261	0.95	1.57	0	12	952,219	0.81	1.50	0	12	84,130	1.49	2.10	0	12
Log average police killings	35,716	0.52	0.61	0	2.48	365,880	0.52	0.61	0	2.48	46,014	0.76	0.67	0	2.48
Variable frequencies for households with no children															
Anxiety = 0 = not at all	25,179	37.58				335,031	39.06				21,749	30.16			
Anxiety = 1 = several days	22,413	33.45				288,146	33.6				25,315	35.11			
Anxiety = 2 = more than half days	9291	13.87				103,475	12.07				10,668	14.79			
Anxiety = 3 = nearly every day	10,122	15.11				130,976	15.27				14,380	19.94			
MSA	38,271	48.28				262,288	27.54				38,888	46.22			
Poverty	11,350	14.32				77,555	8.14				10,797	12.83			
Low income	37,261	47.01				293,095	30.78				36,670	43.59			
Female	51,921	65.51				540,376	56.75				47,306	56.23			
Job loss	33,963	43.26				318,108	33.64				39,129	46.97			
Expected job loss	23,816	30.41				194,269	20.57				28,048	33.75			
South	11,240	14.18				212,249	22.29				8378	9.96			
May 29, 2020	4474	5.64				55,008	5.78				4825	5.74			

(27.54%) HHWOC ($\chi^2 = 24{,}513.7412$, $p < 0.0001$). However, significantly more White HHWOC (22.29%) reside in the South than Black (14.45%) or Hispanic (9.96%) HHWOC ($\chi^2 = 9105.3969$, $p < 0.0001$). Similar to the proportions described above, more Blacks and Hispanics have lost their jobs ($\chi^2 = 7932.6860$, $p < 0.0001$) or fear that they will lose their jobs ($\chi^2 = 10{,}456.7296$, $p < 0.0001$) as a result of the pandemic than Whites. Fewer White (8.14%) HHWOC earn at or below the poverty threshold than Black (14.19%) or Hispanic (12.83%) ($\chi^2 = 4853.8872$, $p < 0.0001$) and similar trends are observed among low-income earners (White: 30.78, Black: 46.59, Hispanic: 43.59; $\chi^2 = 12{,}648.9586$, $p < 0.0001$). While reported anxiety frequency differs significantly between the three groups ($\chi^2 = 2891.3814$, $p < 0.0001$), those factors most closely related to fear among the subgroups can only be compared with multivariate statistics.

Regression: Households with Children

Regression Analysis Regression results, odds ratios, and confidence intervals are listed in Table 3 for HHWC separately by subgroup. Estimates in an ordered logistic regression indicate that for a one-unit increase in the predictor, the response variable level is expected to change by its respective regression coefficient in the ordered log-odds scale while the other variables in the model are held constant. Odds ratios provide a more intuitive interpretation indicating the odds of a higher-ordered frequency of anxiety given a change in the independent regressor, given the other variables are held constant. All subgroups had an odds ratio greater than one for a week suggesting higher odds of more frequent anxiety as the pandemic progressed (OR: Black: 1.049, White: 1.035, Hispanic: 1.009). Similarly, higher age is associated with a lower frequency of anxiety (OR: Black: 0.984, White: 0.984, Hispanic: 0.99). As expected, having recently lost a job (OR: Black: 1.352, White: 1.423, Hispanic: 1.376) or expecting to lose a job (OR: Black: 1.53, White: 2.076, Hispanic: 2.014) is associated with significantly more frequent anxiety. Households earning below the poverty threshold experience higher odds of frequent anxiety (OR: Black: 1.413, White: 1.577, Hispanic: 1.067). However, only Blacks (OR: 1.042) and Whites (OR: 1.143) show a positive relationship between anxiety and low income.

Shifting to an alternative learning format increases the odds of higher anxiety for Blacks (OR = 2.67) and Whites (OR = 2.096) but has a slightly negative effect for Hispanics (OR = 0.875). Interestingly, the number of newly reported COVID-19 cases is only associated with higher anxiety among Whites (OR = 1.044). However, all three subgroups (OR: Black: 1.303, White: 1.158, Hispanic: 1.065) show a higher likelihood of more frequent anxiety associated with higher levels of police killings with the largest magnitude seem among Blacks. Similarly, May 29, 2020—the week following the publicized killing of George Floyd—was associated with a 47% increase in the odds of frequency anxiety among Blacks and an 11% increase among Whites.

Regression: Households Without Children

Regression Analysis Regression results, odds ratios, and confidence intervals are listed in Table 4 for HHWOC separately by subgroup. Odds of higher anxiety among HHWOC are observed among those living in MSAs (OR: Black: 1.363, White: 1.024, Hispanic: 1.079), residing in larger households (OR: Black: 1.147, White: 1.016, Hispanic: 1.002), and earning low (OR: Black: 1.288, White: 1.104, Hispanic: 1.145) or poverty-level income (OR: Black: 1.135, White: 1.814, Hispanic: 1.045). Households with female respondents have higher odds of frequent anxiety (OR: Black: 1.428, White: 1.816, Hispanic: 1.9) than those with male respondents. For Blacks (OR = 1.165) and Hispanics (OR = 1.055), residing in the South increases the likelihood of frequent anxiety but is associated with lower anxiety frequency for Whites (OR = 0.854). As observed among HHWC, later weeks of the HHPS have higher odds of anxiety (OR: Black: 1.041, White: 1.027, Hispanic: 1.023). Results for job loss (OR: Black: 1.771, White: 1.388, Hispanic: 1.402) or expected job loss (OR: Black: 1.286, White: 1.872, Hispanic: 1.847) are similar to those seen in HHWC.

COVID-19 cases were associated with higher anxiety in Whites (OR = 1.049) and Hispanics (OR = 1.01), but not in Blacks (OR = 0.675). Police killings, however, were associated with 64% higher anxiety in Blacks, 39.4% in Hispanics, and 4.5% in Whites. The week following the killing of George Floyd was also associated with similarly high anxiety in Blacks and Hispanics, and very little change in the anxiety of Whites, compared to other times during 2020 (OR: Blacks: 1.452, Whites: 0.973, Hispanics: 1.124).

Regression: Full Sample Regression with Racial/Ethnic Interactions

Results from the full sample regression with racial and ethnic interaction terms are listed in Appendix 1 Table 5. The significance and magnitude of most covariates are similar to previous results. The additional interaction terms are

Table 3 Regression results for Black, White, and Hispanic households with children

Ordered logistic regression model for households with children									
	Black			White			Hispanic		
	Model fit statistics								
AIC	21,184,492			88,721,738			15,770,690		
SC	21,184,509			88,721,761			15,770,706		
−2 log *L*	21,184,486			88,721,732			15,770,684		
	Maximum likelihood estimates								
	Estimate	Std err	Chi squ	Estimate	Std err	Chi squ	Estimate	Std err	Chi squ
Intercept (3)	**−1.4288**	0.0143	10,018.54	**−2.9087**	0.00418	483,884.8	**−0.8599**	0.0119	5253.335
Intercept (2)	**−0.3913**	0.0143	752.5929	**−2.0647**	0.00417	245,520.8	**0.2167**	0.0119	334.2517
Intercept (1)	**1.1017**	0.0143	5958.552	**-0.3866**	0.00415	8674.624	**1.7648**	0.0119	22,093.39
HH size	**−0.0392**	0.000433	8181.696	**−0.00329**	0.00024	188.2153	**0.0868**	0.000517	28,169.19
MSA	**0.1875**	0.00235	6371.553	**0.2603**	0.00144	32,607.9	**−0.2359**	0.00218	11,748.56
South	**−0.0376**	0.00296	160.7103	**−0.2605**	0.000945	75,970.79	**−0.5009**	0.00281	31,805.37
Poverty	**0.3459**	0.0022	24,701.84	**0.4555**	0.0015	92,076.62	**0.0645**	0.00318	412.2512
Low income	**0.0415**	0.00162	656.2494	**0.1337**	0.000792	28,513.9	**−0.1781**	0.00175	10,342.68
Female	**0.2307**	0.0014	27,131.99	**0.5859**	0.000655	799,312.1	**0.7231**	0.00157	211,340.4
Age	**−0.0156**	0.000059	70,245.63	**−0.0179**	0.000029	387,124.9	**−0.00971**	0.000067	21,064.86
Week	**0.0481**	0.000196	59,967.28	**0.0347**	0.000068	258,416.2	**0.00919**	0.000166	3060.171
School change	**0.982**	0.00886	12,272.89	**0.7401**	0.00212	121,787.2	**−0.1333**	0.0058	528.0172
logCOVID-19 deaths	**−0.2485**	0.00188	17,439.63	**0.0427**	0.000548	6066.987	**−0.2615**	0.00163	25,862.85
logPoliceKillings	**0.2646**	0.0017	24,251.33	**0.1471**	0.000864	28,998.91	**0.0631**	0.00201	989.1421
Lost job	**0.3017**	0.00154	38,200.03	**0.3524**	0.000762	214,110.5	**0.3188**	0.00196	26,552.25
Expect to lose Job	**0.4252**	0.00153	77,171.84	**0.7305**	0.000813	807,614.3	**0.7001**	0.0019	135,665.3
May 29, 2020	**0.3899**	0.00381	10,449.19	**0.1051**	0.00133	6294.337	**−0.8783**	0.00384	52,224.11
	Odds ratios								
	Estimate	95% CL		Estimate	95% CL		Estimate	95% CL	
HH size	0.962	0.961	0.962	0.997	0.996	0.997	1.091	1.09	1.092
MSA	1.206	1.201	1.212	1.297	1.294	1.301	0.79	0.787	0.793
South	0.963	0.958	0.969	0.771	0.769	0.772	0.606	0.603	0.609
Poverty	1.413	1.407	1.419	1.577	1.572	1.582	1.067	1.06	1.073
Low income	1.042	1.039	1.046	1.143	1.141	1.145	0.837	0.834	0.84
Female	1.259	1.256	1.263	1.797	1.794	1.799	2.061	2.054	2.067
Age	0.984	0.984	0.985	0.982	0.982	0.982	0.99	0.99	0.99
Week	1.049	1.049	1.05	1.035	1.035	1.035	1.009	1.009	1.01
School change	2.67	2.624	2.717	2.096	2.087	2.105	0.875	0.865	0.885
logCOVID-19 deaths	0.78	0.777	0.783	1.044	1.043	1.045	0.77	0.767	0.772
logPolice killings	1.303	1.299	1.307	1.158	1.157	1.16	1.065	1.061	1.069
Lost job	1.352	1.348	1.356	1.423	1.42	1.425	1.376	1.37	1.381
Expect to lose job	1.53	1.525	1.534	2.076	2.073	2.079	2.014	2.006	2.021
May 29, 2020	1.477	1.466	1.488	1.111	1.108	1.114	0.415	0.412	0.419

Significant at 95% confidence level

Dependent variable: frequency of anxiety (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day)

Estimates weight by person and household

statistically significant, but the coefficients cannot be interpreted directly given the ordered nature of the dependent variable. Instead, they indicate that anxiety within racial and ethnic households of various sizes and at various socioeconomic levels displays some variations depending on its relative composition.

Table 4 Regression results for Black, White, and Hispanic households without children

Ordered logistic regression model for households with no children									
	Black			White			Hispanic		
	Model fit statistics								
AIC	25,994,242			239,691,564			19,382,969		
SC	25,994,260			239,691,591			19,382,986		
−2 Log *L*	25,994,236			239,691,558			19,382,963		
	Maximum likelihood estimates								
	Estimate	Std err	Wald	Estimate	Std err	Wald	Estimate	Std err	Wald
Intercept (3)	**−0.3309**	0.0108	942.6386	**−1.6659**	0.00208	641,699.2	**−2.0426**	0.00799	65,370.14
Intercept (2)	**0.4914**	0.0108	2080.422	**−0.8435**	0.00207	165,669.6	**−1.4336**	0.00797	32,353.25
Intercept (1)	**2.0137**	0.0108	34,825.22	**0.733**	0.00207	125,122.3	**0.223**	0.00795	786.3544
HH size	**0.1373**	0.000296	214,687.4	**0.016**	0.00012	17,663.08	**0.0015**	0.000387	15.0127
MSA	**0.3095**	0.00209	21,921	**0.0238**	0.000881	727.5656	**0.0758**	0.00194	1526.431
South	**0.1529**	0.00276	3066.706	**−0.1578**	0.000582	73,532.46	**0.0534**	0.00295	326.4658
Poverty	**0.1267**	0.00174	5329.267	**0.5956**	0.000717	689,434.9	**0.0439**	0.00229	368.5271
Low income	**0.2534**	0.0015	28,631.79	**0.0985**	0.000524	35,384.75	**0.135**	0.00171	6262.711
Female	**0.3564**	0.00121	87,275.99	**0.5965**	0.000393	2,303,044	**0.6419**	0.00139	212,214.2
Age	**−0.0124**	0.000039	101,929.1	**−0.0268**	0.000012	5,400,532	**−0.0112**	0.00004	77,472.9
Week	**0.0405**	0.000165	60,348.07	**0.0271**	0.00004	460,553.1	**0.023**	0.000141	26,638.51
logCOVID-19 deaths	**−0.3928**	0.00171	52,946.89	**0.0477**	0.000327	21,365.46	**0.00953**	0.00127	56.6654
logPolice killings	**0.4974**	0.00155	102,880.9	**0.0438**	0.000531	6789.953	**0.332**	0.00181	33,491.22
Lost Job	**0.5715**	0.00146	152,540.2	**0.3279**	0.000511	412,344.3	**0.3376**	0.00167	41,041.54
Expect to lose job	**0.2439**	0.00143	28,954	**0.6268**	0.000554	1,281,327	**0.6136**	0.0017	130,868
May 29, 2020	**0.373**	0.0049	5794.925	**−0.0273**	0.000783	1216.679	**0.1165**	0.00314	1374.721
	Odds ratios								
	Estimate	95% CL		Estimate	95% CL		Estimate	95% CL	
HH size	1.147	1.146	1.148	1.016	1.016	1.016	1.002	1.001	1.002
MSA	1.363	1.357	1.368	1.024	1.022	1.026	1.079	1.075	1.083
South	1.165	1.159	1.172	0.854	0.853	0.855	1.055	1.049	1.061
Poverty	1.135	1.131	1.139	1.814	1.812	1.817	1.045	1.04	1.05
Low income	1.288	1.285	1.292	1.104	1.102	1.105	1.145	1.141	1.148
Female	1.428	1.425	1.432	1.816	1.814	1.817	1.9	1.895	1.905
Age	0.988	0.988	0.988	0.974	0.974	0.974	0.989	0.989	0.989
Week	1.041	1.041	1.042	1.027	1.027	1.028	1.023	1.023	1.024
logCOVID-19 deaths	0.675	0.673	0.677	1.049	1.048	1.05	1.01	1.007	1.012
logPolice killings	1.644	1.639	1.649	1.045	1.044	1.046	1.394	1.389	1.399
Lost Job	1.771	1.766	1.776	1.388	1.387	1.389	1.402	1.397	1.406
Expect to lose job	1.276	1.273	1.28	1.872	1.87	1.874	1.847	1.841	1.853
May 29, 2020	1.452	1.438	1.466	0.973	0.972	0.975	1.124	1.117	1.131

Significant at 95% confidence level

Dependent variable: frequency of anxiety (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day)

Estimates weight by person and household

Robustness Test

Results from the pooled model are presented in Tables 6 and 7 of Appendix 2. These results are similar in significance and magnitude to those presented above. The estimation of these additional regression frameworks suggests that the findings from this study are robust to various model specifications.

Discussion

In the current study, we investigated various factors associated with self-reported levels of anxiety among Black, White, and Hispanic households with and without children during the year 2020. As a universal trend, we found that the frequency of anxiety increased over time for all racial/ethnic groups. Similarly, a recent or anticipated loss of employment was associated with increased anxiety among all racial/ethnic groups in households with and without children. Among those households containing children, over 50% of Hispanics and Blacks report that someone in their household has lost their job as a result of the pandemic compared to only 44% of Whites. This loss of income likely contributed to the higher rates of poverty seen among Hispanic and Black households compared to White households. Although it is clear that members of racial/ethnic minority groups are disproportionately burdened by the economic instability of 2020, the overall experience of anxiety felt by these groups did not differ based on employment insecurity or financial concerns.

Other studies have shown similar results. Using data from the Census Bureau, Twenge and Joiner (2020) showed that the prevalence of anxiety and depression among US adults was three times higher during the pandemic than a year earlier in Census Bureau–administered national probability samples [54]. Huang and Zhao (2020) showed that despite heightened anxiety levels among all households, the highest levels of anxiety were observed among younger adults—a caveat they attributed to more frequent social media use among this demographic [55]. While their study did not include indicators of social unrest and violence, Jungmann and Witthöft (2020) find that cyberchondria is particularly prevalent among young people whose anxiety is heightened by frequent access to online, virus-related information [56].

While few studies have examined the evolution of anxiety throughout 2020, Brooks et al. (2020) reviewed psychological studies of the initial months of quarantine [57]. They surmised that a variety of negative psychological impacts, including anxiety, could result from stressors including longer quarantine duration, infection fears, frustration, boredom, inadequate supplies, inadequate information, financial loss, and stigma [57]. Having friends, family, and/or acquaintances who either contracted or suspected that they had contracted COVID-19 was a primary indicator of anxiety and depression among college students in China [58]. This proximity to COVID-19–related illness and death is also cited for the increase in poor mental health outcomes among healthcare workers [59]. In addition to the workforce sector, a variety of sociodemographic factors have been associated with COVID-19-related anxiety including household size [58], urbanicity [60], gender [61], education [62], and age [63].

This study is the first, to our knowledge, to extensively examine the effect of notable stressors in 2020, namely, COVID-19 mortality, police violence, and economic and educational disruption on self-reported anxiety among various racial and ethnic groups in the USA. Results showed that, despite higher anxiety levels among all subgroups, notable differences were also found in the specific associations. Household size was inversely related to anxiety among all respondents with no children. Although quarantine mandates during this period of time resulted in forced isolation—a known contributor to anxiety [57], those with larger households may have benefited from the social support of household members during the time they were not able to interact with those outside of the household. This inverse relationship between household size anxiety was also present for Black and White respondents with children, but these variables demonstrated a positive relationship for Hispanics with children. On average, the number of people living in Hispanic households, both with and without children, was greater compared to Black and White households. It is plausible that although having more adult members of a household is a protective factor against anxiety associated with isolation, having a greater number of children in the household could result in greater anxiety. Hispanic households with children also reported less anxiety in relation to urbanicity and low income compared to other racial/ethnic households. A larger proportion of Hispanic households with children, compared to other racial/ethnic households with children, were located in an urban area. For low-income individuals, living in an urban location allows greater access to a wide range of social services [64, 65], such as food pantries, rental assistance, and mental health services that may have lessened the anxiety related to COVID-19 disruptions.

Among households with children, the frequency of anxiety for White respondents was highly responsive to state-level COVID-19 fatalities, while the association between police-related violence and anxiety was the highest among Black respondents. Previous studies have reported similar racial/ethnic differences in the psychological impact of COVID-19 [25, 66]. In March 2020, Wolf and colleagues found that Blacks were more likely than Whites to report only being "a little worried" or "not worried at all" about contracting COVID-19 [66]. The minimization of the psychological impact of COVID-19 among racial/ethnic minorities appears to be a paradox when considering the higher risk of COVID-19 mortality reported for minority groups [13]. However, the seeming contradiction between the perception of risk and the actual risk is not without precedent. Investigators exploring the racial difference in cancer disparities report heightened fatalistic cancer beliefs and a lower perceived risk of cancer and cancer worries among

non-Hispanic Blacks despite this group being at an increased actual risk of developing cancer [67]. Similar evidence of an incongruence between perceived and actual risk among racial/ethnic minorities has been documented for other health behaviors and diagnoses [68–72]. Mental health resiliency may also be diminished among racial/ethnic minorities. The theory of Minorities' Diminished Returns [73, 74] suggests that widely accepted protective factors against COVID-19 related distress, such as socioeconomic status, employment security, housing status, education, marital status, and social support may have a weaker protective effect for members of racial/ethnic minority groups [75–81].

In contrast to lower COVID-19-related anxiety, Black Americans experienced more anxiety related to anticipated police encounters compared to Whites [82]. A study using data on 4386 respondents to the Survey of the Health of Urban Residents [83] found that beyond one's personal exposure to police brutality, the anticipation of police violence was related to increased depression and anxiety. During 2020, widespread media coverage of police brutality along with several high-profile police killings could have increased the public fear of police-related violence, this fear being particularly salient for racial and ethnic minorities.

News of George Floyd's death on May 25, 2020, while in the custody of police officers [9], was circulated widely through broadcast coverage and social media platforms [31]. Floyd's death sparked nearly immediate and widespread social unrest. Over subsequent days, demonstrations were organized across the USA. As early as May 31st, the National Guard was deployed in an effort to curb rioting and looting that broke out in some areas [84, 85]. Week 5 of the HHPS (May 28–June 2, 2020) corresponded closest to the date following the death of George Floyd. Anxiety during this week was elevated in Black and Hispanic households without children, while there was very little change in the anxiety of White households without children, compared to other times during 2020. Among households with children, the frequency of anxiety during this time increased substantially for Black households and was slightly elevated for White households. Notably, anxiety was reduced for Hispanic households with children during the time following Floyd's death.

In the current study, educational disruption was associated with an increased frequency in anxiety but only among Black and White households. Black caregivers who reported a change in educational delivery from traditional, in-person learning to either a distance-learning format or a complete school closure demonstrated a 2.67-fold increase in anxiety compared to households where educational delivery did not change. Likewise, compared to White caregivers with children in the home who did not experience a disruption in education, those who experienced a change in educational delivery reported twice the frequency of anxiety. Various factors may be responsible for the stress of providing educational oversight for children in the home. For caregivers able to continue their employment and work remotely from home, the anxiety of overseeing course work may originate from balancing employment demands [86, 87]. Among caregivers who recently suffered a job loss, lack job flexibility, or are among the multitude of Americans living in poverty, stress may emerge as a result of not being able to provide the resources (e.g., computers, tablets, or Internet access) necessary to support remote learning for the children in their home [46, 88].

Limitations

While the results presented here are both plausible and logical, this study faced several major limitations. First, the HPS is only a temporary, short-term data collection instrument. Therefore, no historical data exists. Second, the cross-sectional nature of the data made it impossible to determine causality. Each week of the HPS included a different group of respondents making the evolution of individual anxiety impossible to track. While the average number of respondents who reported frequent anxiety increased, this study cannot definitively attribute these increases to the COVID-19 pandemic or the economic manifestations thereof. Third, although important differences were uncovered in the stressors related to anxiety reported among different demographic cohorts, racial and ethnic classifications were self-reported by survey respondents. Given that 2.4% of the population identifies as multiracial and the number of mixed-race families is steadily increasing, classifying households as a single racial/ethnic group may result in a mischaracterization for some households.

Conclusion

In summary, the widespread uncertainty of 2020 manifested differently among Black, White, and Hispanic households in the USA. Anxiety levels among all racial and ethnic groups increased as the year progressed. Anxiety related to external factors was likely exacerbated by recent or anticipated job loss that compounded existing economic instability shared by all racial/ethnic groups. Households with children faced added challenges as the educational system forced traditional learning to transition to a home-based model, and parents became responsible for educational outcomes. Among White households, COVID-19 deaths were significantly associated with anxiety while police-related violence and the highly publicized death of George Floyd were associated with anxiety among Black households. While not all households experienced the same associations, 2020 brought societal turmoil, forced isolation, and ambiguous challenges to American households breeding new anxiety and uncertainty for millions.

Appendix 1

Table 5 Ordered logistic regression with interaction terms

Ordered logistic regression results for the full sample with interaction terms						
	Households with children			Household without children		
AIC	133,741,707			301,509,348		
SC	133,741,731			301,509,375		
− 2 log *L*	133,741,701			301,509,342		
	Estimate	Std err	Chi squ	Estimate	Std err	Chi squ
Intercept (1)	**− 2.5858**	0.00363	507,927.9	− 1.6704	0.00191	763,593.2
Intercept (2)	**− 1.7036**	0.00362	221,785.3	**− 0.8675**	0.00191	207,273.7
Intercept (3)	**− 0.077**	0.00361	455.3696	**0.7107**	0.00191	139,194.7
HH size	**0.00837**	0.00022	1444.17	**0.011**	0.000117	8808.066
MSA	**0.0822**	0.00099	6897.313	**0.0646**	0.000713	8226.195
Poverty	**0.4603**	0.00137	113,537.5	**0.5759**	0.000681	715,668
Low income	**0.0758**	0.000707	11,496.37	**0.1182**	0.000497	56,570.35
Black	**0.1125**	0.00248	2063.486	**− 0.5627**	0.00139	164,796.2
Hispanic	**− 0.4054**	0.003	18,258.32	**0.0943**	0.00149	3999.568
Female	**0.5573**	0.000615	819,881.8	**0.5905**	0.000378	2,435,566
Age	**− 0.0155**	0.000023	439,508.8	**− 0.0248**	0.00001	5,761,994
Week	**0.0307**	0.000057	287,154.2	**0.0281**	0.000036	602,357.2
School change	**0.5676**	0.00185	93,702.2			
logCOVID-19 deaths	**0.00335**	0.000472	50.3815	**0.0276**	0.0003	8453.845
logPolice killings	**0.1633**	0.00069	55,993.22	**0.116**	0.000468	61,465.51
Lost job	**0.3423**	0.000621	304,175	**0.3784**	0.000449	711,235.8
Expect to lose job	**0.6726**	0.000646	1,084,968	**0.5763**	0.000477	1,456,975
South	**− 0.2626**	0.000824	101,515.6	**− 0.1407**	0.000545	66,756.39
May 29, 2020	**0.0536**	0.00115	2181.943	**0.0296**	0.00073	1647.724
HH size*Black	**− 0.0621**	0.000468	17,613.61	**0.1465**	0.000313	219,274.1
Poverty*Black	**− 0.1666**	0.00252	4360.525	**− 0.3359**	0.00184	33,204.14
Low income*Black	0.000878	0.00174	0.2532	**− 0.0127**	0.00156	65.9702
Female*Black	**− 0.3148**	0.00151	43,542.12	**− 0.162**	0.00124	17,184.47
HH size*Hispanic	**0.0662**	0.000536	15,264.48	**− 0.0209**	0.000401	2719.442
Poverty*Hispanic	**− 0.3594**	0.00331	11,766.4	**− 0.6291**	0.00236	71,325.77
Low income*Hispanic	**− 0.1894**	0.00181	10,958.93	**0.0553**	0.00175	995.4539
Female*Hispanic	**0.0971**	0.00164	3502.382	**0.0782**	0.00141	3058.664
Odds ratio estimates						
	Estimate	95% CL		Estimate	95% CL	
HH size	0.985	0.985	0.985	0.976	0.975	0.976
MSA	1.006	1.006	1.006	1.023	1.022	1.023
Poverty	1.086	1.084	1.088	1.067	1.065	1.068
Low income	1.48	1.476	1.483	1.66	1.658	1.662
Female	1.055	1.054	1.057	1.128	1.127	1.129
Age	0.693	0.692	0.694	0.735	0.734	0.736
Week	0.86	0.858	0.861	1.006	1.005	1.008
Black	1.679	1.677	1.681	1.789	1.787	1.79
Hispanic	1.031	1.031	1.031	1.029	1.028	1.029
School change	1.764	1.758	1.77			
logCOVID-19 deaths	1.003	1.002	1.004	1.028	1.027	1.029

Table 5 continued

Ordered logistic regression results for the full sample with interaction terms						
logPolice killings	1.177	1.176	1.179	1.123	1.122	1.124
Lost job	1.408	1.406	1.41	1.46	1.459	1.461
Expect to lose job	1.959	1.957	1.962	1.779	1.778	1.781
South	0.769	0.768	0.77	0.869	0.868	0.87
May 29, 2020	1.055	1.053	1.057	1.03	1.029	1.032

Significant at 95% confidence level.

Dependent variable: frequency of anxiety (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day).

Estimates weighted by person and household.

Appendix 2

Table 6 Regression results for the pooled model for households without children

Ordered logistic regression for households without children									
AIC	282,804,329								
SC	282,804,596								
−2 Log *L*	282,804,269								
	Estimate	Std err	Chi squ						
Intercept (3)	−1.777	0.00198	804,086.6						
Intercept (2)	**−0.9751**	0.00198	243,616.1						
Intercept (1)	**0.6016**	0.00197	92,848.87						
HH size	**0.0288**	0.000105	75,552.92						
MSA	**0.0631**	0.000721	7666.786						
Poverty	**0.4894**	0.000617	629,120						
Low income	**0.1085**	0.000462	55,083.14						
Black	**2.0526**	0.00953	46,408.23						
Hispanic	**0.2573**	0.00776	1099.345						
Female	**0.5778**	0.000351	2,714,389						
Age	**−0.0248**	0.00001	5,744,262						
Week	**0.0279**	0.000036	591,957.1	Black*χ			Hispanic*χ		
logCOVID-19 deaths	**0.0439**	0.000313	19,648.09	**−0.3951**	0.00152	67,385.47	**−0.0602**	0.00126	2264.636
logPolice killings	**0.0484**	0.000507	9126.457	**0.4579**	0.0015	93,472.45	**0.3465**	0.00173	39,970.53
Lost job	**0.3678**	0.000488	567,254.3	**0.212**	0.00149	20,310.04	**−0.0769**	0.00169	2062.109
Expect to lose job	**0.6133**	0.000527	1,352,291	**−0.3787**	0.00152	62,485.09	**0.00808**	0.00174	21.4946
South	**−0.158**	0.000564	78,422.57	**0.1738**	0.00279	3877.742	**0.2898**	0.00294	9709.859
May 29, 2020	**0.0123**	0.000759	261.1555	**0.2413**	0.00495	2373.591	**0.0818**	0.00321	648.1159
Odds ratio estimates									
	Estimate	95% CL							
HH Sie	1.029	1.029	1.029						
MSA	1.065	1.064	1.067						
Poverty	1.631	1.629	1.633						
Low income	1.115	1.114	1.116						
Female	1.782	1.781	1.783						
Age	0.976	0.976	0.976						
Week	1.028	1.028	1.028						
Black	0.796	0.795	0.797						
Hispanic	0.999	0.997	1.000						
logCOVID-19 deaths	1.006	1.005	1.007						
logPolice killings	1.116	1.115	1.117						
Lost job	1.464	1.463	1.465						
Expect to lose Job	1.788	1.786	1.79						
South	0.883	0.882	0.884						
May 29, 2020	1.039	1.037	1.041						

Significant at 95% confidence level.

Dependent variable: frequency of anxiety (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day).

Estimates weighted by person and household.

Table 7 Regression results for pooled model for households with children

Ordered logistic regression model for households with children									
AIC	128,135,505								
SC	128,135,773								
−2 Log *L*	128,135,439								
	Estimate	Std err	Chi squ						
Intercept (1)	**−2.8807**	0.00383	565,593.9						
Intercept (2)	**−1.9973**	0.00382	273,456.8						
Intercept (3)	**-0.369**	0.00381	9385.687						
HH size	**0.0104**	0.000187	3111.327						
MSA	**0.0942**	0.00101	8707.795						
Poverty	**0.4146**	0.00111	139,175.9						
Low income	**0.0245**	0.00063	1504.411						
Black	**0.8874**	0.014	4023.925						
Hispanic	**2.5965**	0.0116	49,871						
Female	**0.5322**	0.000536	984,507.3						
Age	**−0.0155**	0.000023	436,415						
Week	**0.0314**	0.000058	297,755.7	Black*χ			Hispanic*χ		
School change	**0.6113**	0.002	93,328.8	**0.3348**	0.009	1382.025	**−0.5612**	0.00599	8773.066
logCOVID-19 deaths	**0.0436**	0.000506	7434.326	**−0.2377**	0.00173	18,967.52	**−0.3473**	0.00161	46,580.8
logPolice killings	**0.1617**	0.000805	40,399.23	**0.0594**	0.00174	1157.474	**0.0502**	0.00203	613.0939
Lost job	**0.3539**	0.000717	243,774.5	**−0.0651**	0.00167	1509.484	**−0.0164**	0.00203	65.135
Expect to lose job	**0.7182**	0.000758	898,531.9	**−0.2876**	0.00168	29,283.91	0.0037	0.00199	3.4581
South	**−0.2655**	0.000894	88,209.26	**0.1669**	0.00306	2981.212	**−0.2332**	0.00284	6730.196
May 29, 202	**0.1113**	0.00127	7692.278	**0.3611**	0.00403	8037.985	**−0.9089**	0.00398	52,020.87
Odds ratio estimates									
	Estimate	95% CL							
HH size	1.01	1.01	1.011						
MSA	1.099	1.097	1.101						
Poverty	1.514	1.51	1.517						
Low income	1.025	1.023	1.026						
Female	1.703	1.701	1.704						
Age	0.985	0.985	0.985						
Week	1.032	1.032	1.032						
Black	0.72	0.719	0.721						
Hispanic	0.848	0.846	0.849						
School change	1.822	1.814	1.829						
logCOVID-19 deaths	0.966	0.965	0.967						
logPolice killings	1.194	1.192	1.195						
Lost job	1.407	1.405	1.409						
Expect to lose job	1.959	1.957	1.962						
South	0.767	0.765	0.768						
May 29, 2020	1.066	1.063	1.068						

Significant at 95% confidence level.

Dependent variable: frequency of anxiety (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day).

Estimates weighted by person and household.

Data Availability Data are publicly available from sources provided in the manuscript.

Code Availability Not applicable.

Declarations

Competing Interests The authors declare no competing interests.

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