

MIT Open Access Articles

State Policy and Mental Health Outcomes under COVID-19

The MIT Faculty has made this article openly available. **Please share** how this access benefits you. Your story matters.

Citation: Sances, Michael W. and Campbell, Andrea Louise. 2021. "State Policy and Mental Health Outcomes under COVID-19." *Journal of Health Politics Policy and Law*, 46 (5).

As Published: 10.1215/03616878-9155991

Publisher: Duke University Press

Persistent URL: <https://hdl.handle.net/1721.1/141299>

Version: Author's final manuscript: final author's manuscript post peer review, without publisher's formatting or copy editing

Terms of use: Creative Commons Attribution-Noncommercial-Share Alike



State Policy and Mental Health Outcomes under COVID-19

Michael W. Sances

Andrea Louise Campbell

Abstract

Context: The COVID-19 pandemic has caused enormous damage to physiological health and economic security, especially among racial and ethnic minorities. We examine downstream effects on mental health, how effects vary by race and ethnicity, and the role of existing state-level social policies in softening the pandemic's impact.

Methods: We analyze an online, multi-wave Census Bureau survey fielded to nearly a million respondents between late April and July 2020. The survey includes questions measuring psychological distress, as well as indirect measures of experience with the pandemic. We combine these data with state-level measures of COVID cases, lock-down orders, unemployment filings, and safety net policy.

Findings: We find significant mental stress among all respondents and a sizeable gap between non-white and white respondents. Adjusting for pandemic experiences eliminates this gap. The effect of losing work due to the pandemic is slightly offset by state policies such as unemployment benefit size and Medicaid expansion. The magnitude of these offsetting effects is similar across racial/ethnic groups.

Conclusions: The racialized impacts of the pandemic are exacerbated by inequalities in state policy exemplifying structural racism. If the least generous states matched the policies of the most generous, inequalities caused by the pandemic would be diminished.

Introduction

The COVID-19 pandemic has created both a public health crisis in the United States, with millions sickened and thousands dead, and an economic crisis, with unprecedented numbers of Americans facing furloughs or job loss and confronting food insecurity, housing insecurity, and the loss of health insurance. At the same time, the pandemic response in the United States has been highly decentralized. Although federal relief bills temporarily augmented the social safety net, much of the response was relegated to states and localities, where both existing and pandemic-related policy choices varied widely. In addition, the twin health and economic crises affected ethnic and racial minorities the most, raising questions about the adequacy of state policy to offset the devastating effects of the pandemic.

In addition to the direct impacts on health and economic security, preliminary signs show the pandemic has also had an impact on Americans' mental health (Carey 2020). Early examinations comparing survey responses from 2018 and 2020 find that depression symptoms and generalized distress increased (Ettman et al. 2020; McGinty et al. 2020). It is likely that racial and ethnic minorities are disproportionately affected by these mental health effects, and some news coverage of the pandemic has supported this assertion (Pan 2020). Nonetheless, there is still little systematic analysis of mental health outcomes during the pandemic, and even less on the question of disparate impacts by race and ethnicity.

Also unclear is the extent to which state policies are able to offset the negative mental health impacts of the pandemic. Previous studies show that safety net policies can alleviate mental health distress associated with unemployment and food insecurity (Oddo and Mabli 2015; Rodriguez et al. 2001). Questions arise about the effectiveness of existing social policies given

the great magnitude and speed of the pandemic's economic effects, the impact of state variation in social policy generosity, and possible disparate effects across racial and ethnic subgroups.

We utilize data from a unique Census Bureau study to assess mental health effects on vulnerable groups. Fielded between late April and July 2020, this multi-wave study consists of about one million cases, and includes questions on mental health (symptoms of depression and anxiety) and pandemic-related work loss. We use these data to explore the prevalence of psychological distress during the pandemic, and how these mental stresses differ by race and ethnicity. We then link the individual-level experiences to state-level policies, such as the generosity of unemployment benefits, the presence of any paid sick leave policy, and whether a state expanded Medicaid under the Affordable Care Act. We test whether the negative effect of reduced income on mental health is offset by any of these policies, and whether these offsetting effects vary, in turn, by race or ethnicity.

We find that the pandemic has had significant deleterious effects on Americans' mental health, with large majorities reporting symptoms of anxiety and depression. The negative mental health effects have been the most acute for Hispanic and Black Americans, with Asian and white Americans faring relatively better. We also find that among all racial and ethnic groups, pandemic-related work loss worsens psychological distress and that existing state safety net policies ameliorate these effects only partially. We detect no substantive difference in these offsetting effects by race or ethnicity.

Studying whether existing state policies have helped offset the mental health effects of the pandemic is important, as it speaks to the potential need for future policy interventions. It also exposes the toll of state policy variation. Two otherwise similar individuals with the same loss of work income can experience different levels of psychological distress depending merely

on where they happen to live. This variation is deeply embedded in the racial politics of American social policy, which gave rise to interstate differences in safety-net generosity and which continues to drive the disparate racial impacts of the pandemic.

Racial/Ethnic Minorities, Pandemic Experiences, and Mental Health

Pre-pandemic findings about the prevalence of psychological distress in the United States and the effects of economic downturns suggest the pandemic may have had substantial negative effects on individuals' well-being. Depression is the leading cause of disability in the United States to begin with (McKenna 2005), and economic recessions are associated with negative mental health outcomes both in the United States and abroad (Frasquilho et al. 2016; Mucci et al. 2016). With the pandemic leading to the highest levels of unemployment since the Great Depression and the most sudden increases in joblessness on record (Chaney and Morath 2020), journalistic accounts have warned of a looming mental health crisis (e.g. Wan 2020). Between the shutdowns, economic distress, and health worries, there are several reasons to suppose that symptoms of depression and anxiety rose during the pandemic.

A further possibility is that mental health outcomes during the pandemic were worse for vulnerable groups such as racial and ethnic minorities, given they experienced more severe physical health and economic effects on average than whites. Black and Hispanic Americans were more likely than whites to have the co-morbidities that exacerbate COVID-19 (Golestaneh et al. 2020; Kabarriti 2020), and less likely to have health insurance (Artiga, Orgera, and Damico 2020). Black and Hispanic individuals were more likely to contract COVID-19 and to die from it, with particularly high mortality rates among African Americans (Webb Hooper et al. 2020).

Racial and ethnic minority groups also confronted the worst of the pandemic's economic fallout. Black and Hispanic Americans experienced the highest unemployment rates, followed by Asian Americans, due in part to concentration in occupations and sectors most affected by economic shutdowns. In the second quarter of 2020 when unemployment peaked, the unemployment rate was 17.0 percent for Hispanics, 16.3 percent for African Americans, 14.4 percent for Asians, and 12.2 percent for whites, figures that were 9 to 13 percentage points higher than a year earlier (U.S. Bureau of Labor Statistics 2020). Food insecurity also surged during the pandemic, with the proportion of households with children reporting food insecurity increasing most sharply for Black and Hispanic households, to 30 and 25 percent, respectively, in June 2020, compared to 15 percent for Asian households and under 10 percent among white households (Bauer 2020).

Because poor physical health and economic stress are associated with negative mental health outcomes (Mucci et al. 2016; Ohrnberger, Fichera, and Sutton 2017), we might hypothesize that racial and ethnic minority groups who faced the brunt of the pandemic would report more psychological distress than white individuals. Clinical diagnosis of major depressive disorder is less common for Black Americans than among whites, raising concerns that symptomology and diagnosis rates may differ by race (Barnes and Bates 2017). However, Black and Hispanic individuals typically report similar or somewhat higher levels of generalized psychological distress than whites in survey-based instruments such as the Kessler 6 scale and the PHQ-2 and GAD-2 scales, which squares with the higher known prevalence of mental health stressors experienced by minority groups (Barnes and Bates 2017). In the National Health Interview Survey for 2015-16, for example, the percentage of adults with “serious psychological distress” – scoring 13 or higher on the 24-point Kessler 6 scale – was similar for non-Hispanic

white (3.7%), Black (3.6%) and Hispanic (3.7%) individuals (National Center for Health Statistics 2018). A study conducted during the pandemic using the same measure found that severe psychological distress increased between 2018 and July 2020 for all racial/ethnic groups, with the largest increase among Hispanics (McGinty et al. 2020). Measuring psychological distress using modified versions of the PHQ-2 and GAD-2 scales, we report below large increases between April and July 2020, and much higher distress among Black and Hispanic individuals. One question is what pandemic-related stressors are driving these results. Another is how effective state safety-net policies are in ameliorating their mental health effects.

Social Policies and Mental Health

Studies show food insecurity is associated with depression (Liu et al. 2014) but that participation in the Supplemental Nutrition Assistance Program (SNAP) reduces psychological distress in households followed over time (Oddo and Mabli 2015). Similarly, causal studies using panel data show increases in psychological distress and diagnosed mental disorders among unemployed workers (Farre et al. 2018), but unemployed women receiving unemployment benefits or other entitlement benefits have rates of depression similar to those of the employed (while unemployed men and women receiving means-tested benefits or no benefits reported higher rates of depression; Rodriguez et al. 2001). These studies suggest that government safety net programs can have a protective effect on the mental health of individuals facing economic insecurity. We explore whether such programs were able to provide such protective effects during the COVID-19 pandemic, given the speed and depth of the pandemic-induced economic decline. In addition, many safety net programs in the United States are run jointly by state and federal governments, with policy parameters that vary across the states, raising questions about

cross-state differences in such protective effects. Unemployment insurance is a joint federal-state program, but eligibility, benefit levels, and duration vary across states. A few states have paid sick leave policies. Many states had expanded Medicaid under the Affordable Care Act, but 15 states did not have expansion in place in spring/summer 2020.¹

Several mechanisms may link state social policies and individuals' mental health. Unemployment insurance helps offset income loss arising from job loss, reducing the financial strain that has been found to be a predictor of psychological distress among the unemployed (Kessler et al. 1987). Paid sick leave policies could similarly reduce financial strain by partly offsetting income loss among those who fell ill and could not work; studies show that individuals with access to paid sick leave report less psychological distress than those without (Stoddard-Dare et al. 2018). Medicaid expansion enhances the availability of health insurance for those whose employers do not offer insurance and for those who lost their jobs and therefore their insurance; those who are insured report less stress than the uninsured (American Psychological Association 2017).

Although we do not have direct evidence on mechanisms, our data allow us to assess whether variations in the availability and generosity of these safety net programs across states are associated with lower levels of psychological distress among those experiencing job loss or diminished work during the coronavirus pandemic of 2020. Given that Black and Hispanic Americans have experienced the greatest economic fallout, we expect their mental health to be worse on average than among white Americans. We do not have a priori expectations about whether any offsetting effects of safety net policies differ in magnitude for minority groups

¹ Thirty-eight states plus Washington, DC, had adopted Medicaid expansion as of October 1, 2020, but in three, adoption was effective after spring/summer 2020: Nebraska (planned for October 1, 2020), Oklahoma (planned for July 1, 2021), and Missouri (planned for July 1, 2021; Kaiser Family Foundation 2020).

compared to whites. But to the extent to which particularly Black Americans disproportionately live in states with the least expansive social policies – a reality resulting from the racist origins of state policy choices – they may benefit least from any offsetting effects that obtain.

Data and Measures

We use data from Phase 1 of the Household Pulse Survey (HPS) conducted by the U.S. Census Bureau, which consists of twelve weekly cross-sectional surveys from April 23 to July 21, 2020. Respondents are recruited by first sampling from the Census’s Master Address File (MAF), then contacted by text and/or e-mail and recruited into a Qualtrics survey. Responses were collected during a period when the economic fallout of the pandemic was most acute; the unemployment rate, which had been 3.5 percent in February 2020 and 4.4 percent in March, rose to 14.7 percent in April and remained elevated, at 13.3 percent in May, 11.1 percent in June, and 10.2 percent in July. The number of COVID-19 cases had a local peak around 30,000 per day in late April when the survey began, declined through the first week in June, then increased again to nearly 63,000 per day on the last day of data collection in late July (World Health Organization 2020).

The Pulse Survey included four items assessing respondents’ mental wellness, a modified version of the two-item Patient Health Questionnaire (PHQ-2) and the two-item Generalized Anxiety Disorder (GAD-2) scales measuring generalized psychological distress that appear in unmodified form on the National Health Interview Survey. Respondents were asked how often over the last 7 days they had been bothered by “feeling nervous, anxious, or on edge;” “not being able to stop or control worrying;” “having little interest or pleasure in doing things;” and “feeling down, depressed, or hopeless.” Each question has four response options: (1) not at all, (2) several days, (3) more than half the days, (4) nearly every day. Although two of the items measure

symptoms of anxiety and two depression, the four measures are highly correlated over time in our sample. At the individual-level: the correlations between the four items range from 0.63 for the *interest* and *anxious* measures to 0.80 for the *anxious* and *worry* measures (anxiety and depression are often co-morbid; Kessler et al. 2003). In the findings below, we combine the four indicators into a single summary measure (Online Appendix A replicates Tables 1-3 below for each of the four outcome variables separately; the results are largely the same as those for the combined measure).

We measure the state-level impact of the pandemic in three ways. First, we construct a measure of new COVID cases by state using data from the *New York Times*. We compute daily new cases as the difference in new cases from day one to day two; we then average the daily change in cases by week, to merge it with the weekly survey data. We then log the new state cases measure. Second, we use the log number of total unemployment claims filed per week by state, from the US Department of Labor. Third, we use a time-varying measure of whether a state had an active shelter-in-place order when the respondent was surveyed; we obtain this measure from a database constructed by scholars at Boston University's School of Public Health (Raifman et al. 2020).

To capture the individual-level impacts of the pandemic, we use three measures. First, the HPS survey asks if anyone in the respondent's household experienced a loss of any employment income since March 13, 2020.² Second, while the survey does not ask if anyone in the household was sick with COVID, it does ask about not working in the past week due to being "sick with

² Note this is a household-level measure, and encompasses any reduction in income due to any lost work among any household member since March. The survey also includes a measure of whether a respondent themselves worked at all in the past week. We prefer the former measure, as we believe it does a better job capturing the economic shock of the pandemic. For instance, many respondents might have seen reductions in work hours, but they would be coded as working in the past week by the latter measure. That said, our results are substantively similar when using the alternative measure.

coronavirus symptoms.” Third, we use a measure of the increase in food insecurity pre- and post-pandemic. The survey asks respondents which of the following characterizes their household’s food situation prior to and subsequent to March 13: (1) enough of the kinds of food we wanted to eat; (2) enough, but not always the kinds of food we wanted to eat; (3) sometimes not enough to eat; (4) often not enough to eat. We compute the difference between the scales for post- and pre-March 13.

To study the impact of state policy, we use four measures of policy that we expect could offset the effect of pandemic-related work loss on mental health. First, we use the state’s “replacement rate,” or the percent of employment income covered by unemployment benefits in that state; we obtain this measure from the federal Department of Labor. Second, we also measure unemployment generosity using the maximum weekly benefit amount per state, from the World Population Review (state variation in state UI benefits remains even after the \$600 federal supplement contained in the CARES Act pandemic relief bill, signed March 27, 2020). Third, we use an indicator for whether a state has any paid sick leave policy, from the National Partnership for Women & Families. Fourth, we use an indicator for whether the state expanded its Medicaid program under the Affordable Care Act, from the Kaiser Family Foundation.³

While the Pulse data are valuable given the timing and sample size, we note several limitations before proceeding. First, we are only able to classify respondents as Hispanic/White, Non-Hispanic/White, Black, Asian, or “Other.” This means we cannot directly analyze responses among Native Americans, who may have been especially affected by the pandemic. Second, the mental health measures we employ are not directly comparable to the standard PHQ-2 and GAD-

³ Non-white respondents may also have experienced increased mental distress due to the murder of George Floyd, and a renewed focus on racism, after May 25 (e.g. Ang 2021; Bor et al. 2018). In Online Appendix C, we assess whether the murder of George Floyd and subsequent protests changed the trend in our mental health index, and whether any break varied by racial group. We find mental distress worsened for Black respondents after May 25, but only by a small amount that is dwarfed by the overall racial gap.

2 scales because they measure symptoms over 7 days rather than the usual 14 days. Third, all our data are observational, and we are unable to leverage any temporal variation in social policy or individual-level experiences. Thus while the differences in the effects of lost wages may represent the causal effects of social policy, they may also represent other systematic differences between states.

Trends in Mental Health and Differences by Race and Ethnicity

Figure 1 plots the share of respondents reporting any adverse mental health (i.e., a 2, 3 or 4 on the original scale) for each of our four measures.⁴ In each panel, we plot the share for each of five racial/ethnic groups, by survey week. Respondents reported extraordinarily high – and increasing – levels of psychological distress between April and July 2020. Even among the most sanguine respondents – non-Hispanic whites early in the survey period – over 45 percent reported symptoms of depression and more than 60 percent reported feeling anxious. Ethnic and racial minority groups experienced even more mental health stress, with Hispanic respondents reporting the highest level of anxiety and depression followed by “Other” and Black respondents. White respondents reported the lowest levels, with Asians similar to whites or slightly elevated. Psychological distress increased significantly among all groups over this period, even though the unemployment rate and COVID-19 cases were falling.

[Figure 1 here]

⁴ Note that Figure 1 shows any adverse mental health on any of the four indicators, not a score of 3 or more on the PHQ-2 (the cutpoint for screening for major depressive disorder) or 3 or more on the GAD-2 (the cutpoint for screening for generalized anxiety disorder; Centers for Disease Control and Prevention 2021).

We use a series of regressions to assess the statistical significance of these differences, and to explore how much they are driven by the pandemic versus other factors. First, we combine all four measures of mental distress into a single measure, simply averaging the four four-point items. Second, we regress this measure on indicators for each racial/ethnic group, and indicators for survey week. Given possible serial correlation within states, and our interest in state-level policy factors, we cluster all standard errors at the state level.

The first column of Table 1 mirrors the results in Figure 1. Compared to the baseline of white respondents, Black respondents' self-reported mental distress is 0.127 (standard error of 0.011) higher on a four-point scale. Likewise, Hispanics' mental distress is 0.169 (0.006) higher, Asians' mental distress is 0.010 (0.011) higher (so not statistically significant), and mental distress among respondents classified as Other race/ethnicity is 0.216 (0.010) higher. To put these estimates in context, the standard deviation of our dependent variable is about 0.76.

In column (2), we begin to explore the drivers of these gaps, including state-level measures of new COVID cases, unemployment filings, and shelter-in-place orders. Both COVID cases and unemployment filings are significantly associated with greater psychological distress, while the estimate for lockdown orders is also positive but just shy of conventional levels of statistical significance. In column (3), we add individual-level experiences with the pandemic: losing work due to COVID symptoms; losing any work income since March; and increased food insecurity. As predicted, all are significantly associated with worse mental health outcomes. For instance, losing any work income since March is associated with a 0.314 (standard error of 0.005) increase in mental distress. Notably, adjusting for these individual experiences lessens the racial gaps between whites and other groups; for example, the coefficient on Black is now 0.075.

[Table 1 here]

In column (4), we add controls for having health insurance, having any school age children, being married, income (an eight-point, ordinal scale we enter linearly), gender, and age in years. Interestingly, the inclusion of these variables almost entirely eliminates any mental health gaps between whites and Hispanics, and in two cases (for Blacks and Asians) the sign actually reverses. We interpret this result as evidence that variables such as income and having health insurance are, themselves, proxies for exposure to the pandemic. Once we adjust for these factors, we have essentially “controlled away” the pandemic’s unequal impact, and so we have also controlled away the effect of race and ethnicity. This is not to say that race and ethnicity do not have an effect; rather, the deleterious mental health effects of the pandemic operate through non-whites’ greater economic insecurity. (Interestingly, but for reasons we cannot explore due to data limitations, the coefficient for the “Other” racial/ethnic category remains positive and significant, though reduced in magnitude).

Aside from associations with race and ethnicity, we find that lower income, female, and younger respondents reported greater psychological distress compared to their higher income, male, and older counterparts, in keeping with previous literature on the demographic correlates of mental health distress (Accortt et al. 2008; Goldman et al. 2018; Weinberger et al. 2018). Being married and having children in the household have a protective effect, again in line with previous findings (Artazcoz et al. 2004; Jace and Makridis 2020).

The Role of State Policies

A key question is whether state social policies are able to offset the economic fallout – and in turn the negative mental health effects – of the pandemic. Table 2 evaluates the effect of four policies that vary across states: unemployment insurance replacement rates, maximum unemployment insurance benefits, the presence of paid sick leave, and Medicaid expansion under the Affordable Care Act (unsure which measure of unemployment benefit generosity would be most salient, we tested both). Because these policies do not vary over time, and because we are also interested in the effect of the policies on those directly impacted by the pandemic, we study policy effects using a series of regressions with interactions. That is, we regress our psychological distress index on an indicator for losing any income since March, the policy in question, and an interaction between losing income and the policy. The key quantity of interest is the interaction term, which tells us the difference between the effect of losing work income in states with one value of the policy, and the effect of losing work income in states with another value of the policy. The “main” terms are less interesting, but tell us the effect of losing work income in a state with the baseline level of the policy (the *reduced household income* coefficient), and the difference in average mental health outcomes between states with different values of the policy, among those not losing work (the *policy* coefficient).

[Table 2 here]

Each regression in Table 2 also includes all of the covariates from Table 1, not shown for space reasons. The interaction term in the final row shows that while the UI replacement rate has no effect (we suspect the proportion of employment income replaced is less salient to individuals than absolute benefit amount), the other three policies do offset the negative mental health

effects of reduced income. Specifically, in states with the largest maximum UI benefits, the effect of losing work on psychological distress is 0.044 (standard error of 0.016) lower than in states with the smallest benefits. Likewise, in states with paid sick leave, the effect of reduced income is 0.029 (0.011) lower than in states without paid sick leave.⁵ In states that expanded Medicaid, the effect of work loss is 0.027 (0.008) lower than in states that did not expand. Generally speaking, more generous social policies have a small but statistically significant offsetting effect on the mental health fallout of work loss.

Finally, given that ethnic and racial minorities have suffered poorer mental health outcomes during the pandemic than whites, we explore whether these policies' protective effects differ for nonwhites compared to whites. In Table 3 we simplify the racial/ethnic categories by using a nonwhite dummy variable. The ameliorating effects of policy for whites are again seen in the interaction between reduced income and policy. The triple interaction in the last row indicates whether the policy effects differ between white and nonwhite respondents. The coefficients in this row indicate that these policies have roughly equal effects across whites and nonwhites. For two of the policies, the UI replacement rate and paid sick leave, the estimates are not significantly different from zero. For the remaining policies, the max UI benefit and Medicaid expansion, the estimates are positive and significantly different from zero, though not large enough for us to rule out any offsetting effects for nonwhites.⁶

⁵ Recall that the “losing work/work loss/reduced income” measure indicates loss of employment income in the household, not necessarily unemployment, for which paid sick leave would not apply. In Online Appendix B we examine whether state paid sick leave counteracts the effect of “not working for pay” because of having Covid. The effect is not statistically significant, perhaps because those who did not work in the last week because they had Covid contains a mix of the unemployed and the still-employed, with only the latter group having access to paid sick leave.

⁶ For instance, for white respondents, the coefficient for reduced income X Medicaid expansion is -0.034, with a standard error of 0.011, suggesting that the effect of reduced income on distress is 0.034 lower for whites living in expansion states. The triple interaction for reduced income X policy X non-white, in turn, is 0.024, with a standard error of 0.011. The offsetting effect for non-whites is thus $-0.034 + 0.024 = -0.010$.

[Table 3 here]

Discussion

Although we find substantively similar offsetting policy effects across racial and ethnic groups, this does not necessarily imply that the policies we examine play no role in reducing the pandemic-induced gap in mental health outcomes across groups. For example, we estimate that the baseline effect of losing work income (in Table 2) is about 0.26 (on a four-point scale) in states that did not expand Medicaid, and that this effect is reduced by 0.034 points in states that did expand Medicaid. Given non-whites are disproportionately likely to have lost income due to the pandemic, the benefits of Medicaid expansion would, in theory, flow disproportionately to this group. An increase in the number of states expanding Medicaid would, according to our estimates, help narrow the mental health gap by race and ethnicity.

At the same time, non-white Americans are also spatially concentrated in states with the least generous social policies. For instance, in 2015, the Kaiser Family Foundation estimated that 3.1 million Americans fell into the ACA “coverage gap,” meaning they would be eligible for Medicaid expansion if their state did expand, but would remain uninsured if their state did not. The share of these Americans who are Black or Hispanic is 56 percent (Artiga, Damico, and Garfield 2015). Although more states expanded Medicaid after 2015, seven of the eleven states with the highest share Black population had not done so by spring/summer 2020. These findings correspond with academic research showing that in states with larger Black populations, state welfare benefits are lower (Howard 1999; Soss et al. 2001), as are unemployment benefits (Bruch et al. 2020).

The less generous safety net policies of some states represent yet another example of the structural racism that pervades American public policy (King and Smith 2005; Michener 2019). The COVID-19 pandemic led to worker illness, reduced incomes, and loss of health insurance, among other threats to well-being. Social policy aimed at these needs can offset the psychological distress arising from these forms of health and economic insecurity. But states vary widely in their generosity, for reasons deeply embedded in the racialized development of the American welfare state (Lieberman 1998). The psychological toll of the pandemic laid bare the shortcomings of these varying state policy paths.

Conclusion

Majorities of Americans reported symptoms of depression and anxiety during the COVID-19 pandemic, but reported symptoms were greater among minority groups than among whites. Although similar measures typically reveal levels of psychological distress among Black and Hispanic individuals that are the same or somewhat elevated compared to whites, during the pandemic such individuals reported dramatically higher rates of distress. The greater prevalence of depression and anxiety symptoms among Black and Hispanic populations is concerning for many reasons, including the fact that minority individuals are half as likely as non-Hispanic whites to receive mental health treatment (Gonzalez et al. 2010).

These analyses also indicate that social welfare policies can ameliorate the effects of severe economic insecurity. Those who lost employment income in states with paid sick leave provisions, Medicaid expansion in place, and more generous unemployment benefits experienced less psychological impact than those losing work income in states with lower benefits or no policy at all. Thus social policy generosity is associated with individual well-being. Because

symptoms of anxiety and depression affect social, occupational, and educational performance, as well as political participation (Ojeda 2015), our study suggests that government policy choices affect individuals' mental health and ability to successfully navigate their personal, professional, and political lives.

In the United States, however, many social policy parameters vary across states, owing significantly to the fraught racial politics of enactment, in which the white Southern lawmakers whose votes were needed for passage insisted on state control of program eligibility and generosity to limit access for Black Americans (Lieberman 1998). These dynamics were evident during the creation of both unemployment insurance in the 1930s and Medicaid in the 1960s. Other policies, such as nationwide paid sick leave, never passed, and were only created later in a handful of Democratic-led states. Such dynamics wove racism into the structure of American social policy. The ensuing toll harms members of minority groups every day but becomes particularly acute during economic emergencies such as the COVID-19 pandemic. The dramatically increased distress that the pandemic visited upon many Americans was alleviated somewhat in states with more generous social policies. Unfortunately, Black Americans in particular are less likely to live in such states. If the least generous states matched the policies of the most generous, the negative mental health effects of the pandemic would be diminished.

References

- Accortt, Eynav Elgavish, Marlene P. Freeman, and John J.B. Allen. 2008. "Women and Major Depressive Disorder: Clinical Perspectives on Causal Pathways." *Journal of Women's Health* 17, no. 10: 1583-90.

- American Psychological Association. 2017. *Stress in America: The State of Our Nation*. Stress in America Survey.
- Ang, Desmond. 2021. "The effects of police violence on inner-city students." *The Quarterly Journal of Economics* 136, no. 1: 115-168.
- Artazcoz, Lucia, Joan Banach, Carme Borrell, and Immaculada Cortes. 2004. "Unemployment and Mental Health: Understanding the Interactions among Gender, Family Roles, and Social Class." *American Journal of Public Health* 91, no. 1: 82-88.
- Artiga, Samantha, Anthony Damico, and Rachel Garfield. 2015. "The Impact of the Coverage Gap for Adults in States Not Expanding Medicaid by Race and Ethnicity." October 26. Kaiser Family Foundation.
- Artiga, Samantha, Kendal Orgera, and Anthony Damico. 2020. "Changes in Health Coverage by Race and Ethnicity since the ACA, 2010-2018." March. Kaiser Family Foundation.
- Barnes, David M., and Lisa M. Bates. 2017. "Do Racial Patterns in Psychological Distress Shed Light on the Black-White Depression Paradox? A Systematic Review." *Social Psychiatry and Psychiatric Epidemiology* 52, no. 8: 913-28.
- Bauer, Lauren. 2020. "About 14 Million Children in the US Are Not Getting Enough to Eat." Brookings Institution. July 9. www.brookings.edu/blog/up-front/2020/07/09/about-14-million-children-in-the-us-are-not-getting-enough-to-eat (accessed 10/14/20).
- Bor, Jacob, Atheendar S. Venkataramani, David R. Williams, and Alexander C. Tsai. 2018. "Police killings and their spillover effects on the mental health of black Americans: a population-based, quasi-experimental study." *The Lancet* 392 (10144): 302-10.
- Bruch, Sarah K., Janet C. Gornick, and Joseph van der Naald. 2020. "Geographic Inequality in Social Provision: Variation Across the U.S. States." Working paper, National Bureau of

- Economic Research. <https://www.nber.org/books-and-chapters/measuring-distribution-and-mobility-income-and-wealth/geographic-inequality-social-provision-variation-across-us-states>
- Carey, Benedict. 2020. "Is the pandemic sparking suicide?" *The New York Times*, May 19. www.nytimes.com/2020/05/19/health/pandemic-coronavirus-suicide-health.html
- Centers for Disease Control and Prevention. 2021. "Anxiety and Depression: Household Pulse Survey." February 10. www.cdc.gov/nchs/covid19/pulse/mental-health.htm.
- Chaney, Sarah, and Eric Morath. 2020. "April Unemployment Rate Rose to a Record 14.7%" *Wall Street Journal*, May 8.
- Ettman, Catherine K., Salma M. Abdalla, Gregory H. Cohen; Laura Sampson, Patrick M. Vivier, and Sandro Galea. 2020. "Prevalence of Depression Symptoms in US Adults Before and During the COVID-19 Pandemic." *JAMA Network Open*. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2770146>
- Farre, Lidia, Francesco Fasani, and Hannes Mueller. 2018. "Feeling Useless: The Effect of Unemployment on Mental Health in the Great Recession." *IZA Journal of Labor Economics* 7, no. 8: 1-34.
- Frasquilho, Diana, Margarida Gaspar Matos, Ferdinand Salonna, Diogo Guerreiro, Claudia C. Storti, Tania Gaspar and Jose M. Caldas-de-Almeida. 2016. "Mental Health Outcomes in Times of Economic Recession: A Systematic Literature Review." *BMC Public Health* no. 16: 115.
- Goldman, Noreen, Dana A. Gleib, and Maxine Weinstein. 2018. "Declining Mental Health among Disadvantaged Americans." *PNAS* 115, no. 28: 7290-95.
- Golestaneh, Ladan, et al. 2020. "The Association of Race and COVID-19 Mortality." *Lancet*

- EClinical Medicine* 25: 100455. www.thelancet.com/action/showPdf?pii=S2589-5370%2820%2930199-1.
- Gonzalez, Hector M., William A. Vega, David R. Williams, Wassim Tarraf, Brady T. West, and Harold W. Neighbors. 2010. "Depression Care in the United States: Too Little for Too Few." *Archives of General Psychiatry* 67, no. 1: 37-46.
- Howard, Christopher. 1999. "The American Welfare State, or States?" *Political Research Quarterly* 52, no. 2: 421-42.
- Jace, Clara, and Christos A. Makridis. 2020. "Will You Be Mine? Marriage as a Protective Factor During Coronavirus." July 27. <https://ssrn.com/abstract=3655856>
- Kabarriti R, Brodin NP, Maron MI, et al. 2020. "Association of Race and Ethnicity with Comorbidities and Survival Among Patients with COVID-19 at an Urban Medical Center in New York." *JAMA Network Open* 3, no. 9: e2019795.
- Kaiser Family Foundation. 2020. "Status of State Action on the Medicaid Expansion Decision." October 1.
- Kessler, RC, et al. 2003. "The Epidemiology of Major Depressive Disorder: Results from the National Comorbidity Survey Replication (NCS-R)." *JAMA* 289, no. 23: 3095-3105.
- Kessler, Ronald C., J. Blake Turner, and James S. House. 1987. "Intervening Processes in the Relationship between Unemployment and Health." *Psychological Medicine* 17: 949-61.
- King, Desmond S., and Rogers M. Smith. 2005. "Racial Orders in American Political Development." *American Political Science Review* 99, no. 1: 75-92.
- Lieberman, Robert C. 1998. *Shifting the Color Line: Race and the American Welfare State*. Cambridge: Harvard University Press.
- Liu, Y., Njai, R. S., Greenlund, K. J., Chapman, D. P., & Croft, J. B. 2014. "Relationships

- between Housing and Food Insecurity, Frequent Mental Distress, and Insufficient Sleep among Adults in 12 US States, 2009.” *Preventing Chronic Disease* 11: E37.
- McGinty, Emma E., Rachel Presskreischer, Hahrie Han, and Colleen L. Barry. 2020. “Psychological Distress and Loneliness Reported by US Adults in 2018 and April 2020.” *JAMA* 324, no. 1: 93-94.
- McKenna, MT. 2005 “Assessing the Burden of Disease in the United States using Disability-Adjusted Life Years.” *American Journal of Preventive Medicine* 28, no. 5: 415-423.
- Michener, Jamila. 2019. “Policy Feedback in a Racialized Polity.” *Policy Studies Journal* 47, no. 2: 423-50.
- Mucci, Nicola et al. 2016. “The correlation between stress and economic crisis: a systematic review.” *Neuropsychiatric Disease and Treatment* 12: 983-93.
- National Center for Health Statistics. 2018. “Health, United States, 2017: With Special Feature on Mortality.” Hyattsville, MD.
- Oddo, Vanessa M., and James Mabli. 2015. “Association of Participation in the Supplemental Nutrition Assistance Program and Psychological Distress.” *American Journal of Public Health* 105, no. 6: 30-35.
- Ohrnberger, Julius, Eleonora Fichera, and Matt Sutton. 2017. “The Relationship between Physical and Mental Health: A Mediation Analysis.” *Social Science & Medicine* 195: 42-49.
- Ojeda, Christopher. 2015. “Depression and Political Participation.” *Social Science Quarterly* 96, no. 5: 1226-43.
- Pan, Deanna. 2020. “Black Americans, suffering disproportionately from COVID-19, face a

- mounting mental health crisis. *The Boston Globe*, September 7.
- www.bostonglobe.com/2020/09/07/metro/black-americans-suffering-disproportionately-covid-19-face-mounting-mental-health-crisis/
- Raifman, Julia, Kristen Nocka, David Jones, Jacob Bor, Sarah Ketchen Lipson, Jonathan Jay, and Philip Chan. 2020. "COVID-19 US state policy database." Available at: www.tinyurl.com/statepolicies. Accessed January 18, 2021.
- Rodriguez, Eunice, Edward A. Frongillo, and Pinky Chandra. 2001. "Do Social Programmes Contribute to Mental Well-Being? The Long-Term Impact of Unemployment on Depression in the United States." *International Journal of Epidemiology* 30:163-70.
- Soss, Joe, Sanford F. Schram, Thomas Vartanian, and Erin S. O'Brien. 2001. "Setting the Terms of Relief: Explaining State Policy Choices in the Devolution Revolution." *American Journal of Political Science* 45, no. 2: 378-95.
- Stoddard-Dare, Patricia, Leanne DeRigne, Cyleste C. Collins, Linda M. Quinn, and Kimberly Fuller. 2018. "Paid Sick Leave and Psychological Distress: An Analysis of U.S. Workers." *American Journal of Orthopsychiatry* 88, no. 1: 1-9.
- U.S. Bureau of Labor Statistics. 2020. "Employment Status of the Civilian Noninstitutional Population by Race, Hispanic or Latino Ethnicity, Sex and Age, Seasonally Adjusted." www.bls.gov/web/empsit/cpsee_e02.pdf (accessed 10/14/20).
- Wan, William. 2020. "The Coronavirus Pandemic Is Pushing America into a Mental Health Crisis." *Washington Post*, May 4.
- Webb Hooper, Monica, AnnaMaria Napoles, and Eliseo J. Perez-Stable. 2020. "COVID-19 and Racial/Ethnic Disparities." *JAMA* 323, no. 24: 2466-67.
- Weinberger, A.H., M. Gbedemah, A.M Martinez, and D. Nash. 2018. "Trends in Depression

Prevalence in the USA from 2005 to 2015: Widening Disparities in Vulnerable Groups.”

Psychological Medicine 48, no. 8: 1308-15.

World Health Organization. 2020. WHO Coronavirus Disease (COVID-19) Dashboard.

Covid19.who.int (accessed 10/14/2020).

	(1)	(2)	(3)	(4)
Black	0.127*** (0.011)	0.117*** (0.011)	0.075*** (0.009)	-0.064*** (0.006)
Hispanic	0.169*** (0.006)	0.157*** (0.005)	0.107*** (0.008)	-0.000 (0.011)
Asian	0.010 (0.011)	-0.001 (0.009)	-0.011 (0.009)	-0.033** (0.009)
Other	0.216*** (0.010)	0.217*** (0.008)	0.167*** (0.008)	0.067*** (0.006)
Log new cases in state		0.009* (0.004)	0.012** (0.004)	0.008* (0.003)
Log state unemployment claims		0.011* (0.005)	0.002 (0.005)	0.017** (0.006)
State shelter in place order		0.025 (0.013)	0.019 (0.012)	0.033** (0.010)
Lost work because had Covid			0.342*** (0.016)	0.242*** (0.015)
Reduced household income			0.314*** (0.005)	0.238*** (0.005)
Change in food insecurity			0.178*** (0.003)	0.157*** (0.002)
Have health insurance				-0.072*** (0.005)
Any school age kids				-0.012** (0.004)
Married				-0.080*** (0.003)
Income				-0.054*** (0.002)
Female				0.139*** (0.002)
Age				-0.008*** (0.000)
Constant	1.519*** (0.008)	1.328*** (0.043)	1.289*** (0.046)	1.881*** (0.061)
Observations	987,139	987,139	980,303	930,284

*Table 1: Psychological distress and race/ethnicity. Regressions also include indicators for survey week. Standard errors in parentheses, clustered by state. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced household income	0.247*** (0.013)	0.257*** (0.009)	0.246*** (0.005)	0.258*** (0.007)
Policy	-0.007 (0.020)	0.012 (0.021)	0.055*** (0.009)	0.034*** (0.008)
Reduced income X policy	-0.015 (0.019)	-0.044** (0.016)	-0.029** (0.011)	-0.027** (0.008)
Observations	930,284	930,284	930,284	930,284

*Table 2: Interactions between state policies and reduced household income. All regressions include covariates from Table 1. State-clustered errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced hh income	0.265*** (0.015)	0.273*** (0.011)	0.255*** (0.006)	0.274*** (0.009)
Policy	-0.009 (0.020)	0.018 (0.022)	0.061*** (0.010)	0.036*** (0.008)
Non-white	-0.016 (0.014)	0.009 (0.011)	0.014 (0.007)	0.008 (0.008)
Reduced X non-white	-0.062*** (0.013)	-0.060*** (0.010)	-0.041*** (0.007)	-0.060*** (0.009)
Reduced X policy	-0.027 (0.022)	-0.055** (0.019)	-0.024 (0.014)	-0.034** (0.011)
Non-white X policy	0.036 (0.023)	-0.006 (0.019)	-0.033* (0.013)	-0.002 (0.012)
Reduced X policy X non-white	0.035 (0.018)	0.042* (0.018)	0.005 (0.011)	0.024* (0.011)
Observations	930,284	930,284	930,284	930,284

*Table 3: Interactions between state policies, work loss, and race/ethnicity. All regressions include covariates from previous tables. State-clustered errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

(See enclosed file “figure 1.pdf”)

Figure 1: Psychological distress and race/ethnicity by week. The vertical axis is the share of respondents reporting any mental health stress on each of four indicators.

Online Appendix A: Results by Outcome

In this appendix we replicate our main results (Tables 1-3) using each of our four mental health measures, instead of the aggregated measure we use in the main text. Table A1 corresponds to Table 1; Table A2 corresponds to Table 2; and Table A3 corresponds to Table 3. In general, the results using each particular outcome are consistent with the results using the aggregate outcome.

	Anxious		Worry		Interest		Down	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black	0.064*** (0.014)	-0.164*** (0.009)	0.216*** (0.014)	-0.010 (0.008)	0.183*** (0.013)	-0.025** (0.007)	0.117*** (0.013)	-0.097*** (0.008)
Hispanic	0.176*** (0.008)	-0.038* (0.015)	0.232*** (0.008)	0.031* (0.012)	0.182*** (0.007)	0.007 (0.011)	0.162*** (0.006)	-0.023 (0.013)
Asian	-0.089*** (0.014)	-0.164*** (0.011)	0.069*** (0.014)	0.024 (0.012)	0.042*** (0.009)	0.011 (0.010)	0.012 (0.012)	-0.029** (0.010)
Other	0.232*** (0.016)	0.046*** (0.011)	0.281*** (0.011)	0.105*** (0.007)	0.252*** (0.011)	0.095*** (0.007)	0.235*** (0.013)	0.070*** (0.008)
Log new cases in state		0.005 (0.005)		0.010** (0.004)		0.013*** (0.004)		0.009** (0.003)
Log state unemployment claims		0.027** (0.009)		0.018** (0.006)		0.012* (0.006)		0.015* (0.006)
State shelter in place order		0.052** (0.016)		0.029** (0.010)		0.028** (0.010)		0.032** (0.010)
Lost work because had Covid		0.273*** (0.019)		0.285*** (0.020)		0.318*** (0.019)		0.275*** (0.023)
Reduced household income		0.301*** (0.006)		0.298*** (0.006)		0.230*** (0.005)		0.235*** (0.005)
Have health insurance		-0.047*** (0.007)		-0.104*** (0.007)		-0.098*** (0.007)		-0.138*** (0.007)
Change in food insecurity		0.196*** (0.003)		0.181*** (0.003)		0.173*** (0.003)		0.162*** (0.003)
Any school age kids		0.003 (0.005)		0.008 (0.005)		-0.042*** (0.004)		-0.045*** (0.004)
Married		-0.080*** (0.004)		-0.061*** (0.004)		-0.120*** (0.004)		-0.118*** (0.004)
Income		-0.046*** (0.002)		-0.066*** (0.002)		-0.073*** (0.002)		-0.068*** (0.002)
Female		0.229*** (0.003)		0.198*** (0.003)		0.063*** (0.003)		0.092*** (0.003)
Age		-0.013*** (0.000)		-0.009*** (0.000)		-0.007*** (0.000)		-0.008*** (0.000)
Constant	2.069*** (0.011)	2.428*** (0.090)	1.760*** (0.008)	2.128*** (0.061)	1.719*** (0.008)	2.237*** (0.062)	1.686*** (0.007)	2.246*** (0.068)
Observations	991,412	933,351	990,862	933,105	990,339	932,803	991,186	933,611

*Table A1: Psychological distress and race/ethnicity: results by outcome. Regressions also include indicators for survey week. Standard errors in parentheses, clustered by state. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

(a) Anxious

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced household income	0.309*** (0.017)	0.321*** (0.012)	0.311*** (0.007)	0.325*** (0.009)
Policy	-0.003 (0.028)	0.034 (0.029)	0.087*** (0.013)	0.052*** (0.011)
Reduced income X policy	-0.013 (0.024)	-0.046* (0.023)	-0.037* (0.015)	-0.033** (0.011)
Observations	933,351	933,351	933,351	933,351

(b) Worry

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced household income	0.312*** (0.017)	0.321*** (0.012)	0.306*** (0.007)	0.318*** (0.009)
Policy	-0.015 (0.019)	-0.001 (0.022)	0.048*** (0.009)	0.026** (0.009)
Reduced income X policy	-0.023 (0.024)	-0.053* (0.021)	-0.029* (0.012)	-0.027* (0.011)
Observations	933,105	933,105	933,105	933,105

(c) Interest

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced household income	0.240*** (0.013)	0.252*** (0.008)	0.239*** (0.005)	0.251*** (0.007)
Policy	-0.015 (0.021)	-0.004 (0.024)	0.044*** (0.010)	0.029** (0.010)
Reduced income X policy	-0.017 (0.019)	-0.051** (0.015)	-0.031** (0.011)	-0.028** (0.008)
Observations	932,803	932,803	932,803	932,803

(d) Down

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced household income	0.246*** (0.015)	0.260*** (0.010)	0.245*** (0.006)	0.260*** (0.007)
Policy	-0.005 (0.023)	0.018 (0.023)	0.060*** (0.011)	0.042*** (0.008)
Reduced income X policy	-0.018 (0.022)	-0.056** (0.018)	-0.034** (0.012)	-0.034*** (0.009)
Observations	933,611	933,611	933,611	933,611

Table A2: Interactions between state policies and reduced income: results by outcome. All regressions include covariates from Table 1. State-clustered errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

(a) Anxious

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced household income	0.339*** (0.020)	0.350*** (0.015)	0.327*** (0.008)	0.351*** (0.012)
Policy	-0.004 (0.029)	0.046 (0.031)	0.097*** (0.015)	0.055*** (0.011)
Non-white	-0.076** (0.024)	-0.037* (0.017)	-0.037** (0.011)	-0.051*** (0.013)
Reduced income X non-white	-0.106*** (0.021)	-0.112*** (0.014)	-0.077*** (0.010)	-0.096*** (0.016)
Reduced income X policy	-0.030 (0.028)	-0.068* (0.026)	-0.028 (0.019)	-0.042** (0.014)
Non-white X policy	0.041 (0.041)	-0.032 (0.031)	-0.056** (0.021)	0.000 (0.019)
Reduced income X policy X non-white	0.050 (0.030)	0.082** (0.024)	0.008 (0.017)	0.025 (0.018)
Observations	933,351	933,351	933,351	933,351

(b) Worry

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced household income	0.331*** (0.019)	0.337*** (0.014)	0.313*** (0.008)	0.336*** (0.012)
Policy	-0.018 (0.019)	0.006 (0.023)	0.055*** (0.009)	0.029** (0.009)
Non-white	0.026 (0.016)	0.055*** (0.012)	0.058*** (0.008)	0.054*** (0.010)
Reduced income X non-white	-0.065*** (0.015)	-0.062*** (0.012)	-0.036*** (0.008)	-0.064*** (0.009)
Reduced income X policy	-0.038 (0.027)	-0.068** (0.024)	-0.023 (0.017)	-0.038** (0.014)
Non-white X policy	0.039 (0.025)	-0.014 (0.021)	-0.034* (0.013)	-0.007 (0.013)
Reduced income X policy X non-white	0.046* (0.023)	0.056* (0.024)	-0.000 (0.016)	0.036** (0.013)
Observations	933,105	933,105	933,105	933,105

(c) Interest

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced household income	0.259*** (0.016)	0.266*** (0.011)	0.246*** (0.006)	0.266*** (0.010)
Policy	-0.019 (0.022)	-0.003 (0.025)	0.049*** (0.010)	0.030** (0.010)
Non-white	0.008 (0.013)	0.025* (0.011)	0.039*** (0.007)	0.030** (0.009)
Reduced income X non-white	-0.064*** (0.017)	-0.050*** (0.014)	-0.037*** (0.008)	-0.057*** (0.011)
Reduced income X policy	-0.032 (0.022)	-0.060** (0.018)	-0.027 (0.014)	-0.036** (0.011)
Non-white X policy	0.042* (0.021)	0.018 (0.021)	-0.025* (0.012)	0.005 (0.012)
Reduced income X policy X non-white	0.044 (0.025)	0.027 (0.025)	0.005 (0.012)	0.026 (0.013)
Observations	932,803	932,803	932,803	932,803

(d) Down

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Reduced household income	0.258*** (0.018)	0.269*** (0.012)	0.249*** (0.007)	0.272*** (0.010)
Policy	-0.007 (0.023)	0.022 (0.024)	0.065*** (0.012)	0.044*** (0.009)
Non-white	-0.044** (0.014)	-0.020 (0.011)	-0.013 (0.008)	-0.019* (0.008)
Reduced income X non-white	-0.041* (0.017)	-0.038** (0.013)	-0.024** (0.008)	-0.045*** (0.011)
Reduced income X policy	-0.027 (0.025)	-0.063** (0.021)	-0.031* (0.015)	-0.041*** (0.011)
Non-white X policy	0.044 (0.024)	0.008 (0.020)	-0.023 (0.014)	0.003 (0.011)
Reduced income X policy X non-white	0.029 (0.024)	0.029 (0.024)	0.005 (0.012)	0.028* (0.013)
Observations	933,611	933,611	933,611	933,611

Table A3: Interactions between state policies, reduced income, and race/ethnicity: results by outcome. All regressions include covariates from previous tables. State-clustered errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Online Appendix B: Table 2 with Alternative Work Loss Measure

Table A4 replicates Table 2 from the main text, but substituting an indicator for having lost work due to having instead of reduced income for any reason. We never see a statistically significant effect, and only once do we see a negative coefficient. This may be due to a lack of power: only about 4,000 respondents (less than one half of one percent) report not working because of Covid in our sample.

	(1) Replacement rate	(2) Max benefit	(3) Paid sick leave	(4) Medicaid expansion
Lost work because had Covid	0.195*** (0.041)	0.230*** (0.029)	0.242*** (0.019)	0.238*** (0.021)
Policy	-0.013 (0.018)	-0.005 (0.020)	0.043*** (0.009)	0.023* (0.009)
Covid X policy	0.083 (0.064)	0.029 (0.061)	-0.007 (0.031)	0.004 (0.029)
Observations	930,284	930,284	930,284	930,284

*Table A4: Interactions between state policies and loss of work due to Covid. All regressions include covariates from Table 1. State-clustered errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Online Appendix C: Accounting for George Floyd’s Murder

To account for any effects of the murder of George Floyd and subsequent protests, we test whether there is a break in the over-time trend in our mental health index, and whether that break varies by racial group. To do so, we regress our index on an indicator for being surveyed after May 25, week (i.e., a linear time trend), and their interaction; we estimate this regression separately for each racial/ethnic group in our data. We also estimate a version of this regression including a quadratic trend as well. Table A5 shows the results. The “post” coefficient, which represents any sudden change in outcomes immediately after the murder, is only positive and significant for Black respondents. That said, the magnitude is small – about 0.04 on a four-point scale – and we also see an inexplicable, similarly sized but negative and significant estimate for Hispanics.

	White		Black		Hispanic		Asian		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post George Floyd	0.005 (0.004)	0.005 (0.004)	0.036** (0.011)	0.036** (0.011)	-0.029** (0.009)	-0.029** (0.009)	0.005 (0.014)	0.005 (0.014)	0.002 (0.019)	0.002 (0.019)
Week	-0.001*** (0.000)	-0.001* (0.000)	-0.001 (0.001)	-0.002 (0.001)	0.000 (0.000)	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Post X week	0.003*** (0.000)	0.003*** (0.001)	0.002*** (0.001)	0.004* (0.002)	0.003*** (0.000)	0.004* (0.001)	0.003*** (0.001)	0.003 (0.003)	0.001 (0.001)	0.002 (0.002)
Week squared		0.000 (0.000)		-0.000 (0.000)		-0.000 (0.000)		-0.000 (0.000)		-0.000 (0.000)
Constant	1.476*** (0.006)	1.477*** (0.007)	1.602*** (0.012)	1.594*** (0.014)	1.663*** (0.011)	1.660*** (0.012)	1.488*** (0.018)	1.487*** (0.024)	1.710*** (0.024)	1.708*** (0.027)
Observations	755,647	755,647	75,655	75,655	64,491	64,491	44,844	44,844	46,502	46,502

*Table A5: Effect of being surveyed after the George Floyd murder on psychological distress. State-clustered errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

To test whether our main results are robust to any such effect, we re-estimate the regressions presented in Table 1 earlier, now including indicators for being post-Floyd’s murder, post X week interactions, and interactions between post, post X week, and all racial and ethnic groups

(white respondents are the reference category). We show the results in Table A6. Adjusting for the post-George Floyd period has no substantive effect on the race or ethnicity effects, regardless of the specification. We also see that the post coefficients, and their interactions with race and ethnicity, behave similarly to the effects seen in Table A5. For instance, the interaction between post and Black is between 0.02 and 0.03 depending on the specification. Overall, while there may be an effect of Floyd's murder on mental health, any effect is small, and ultimately independent of the general gap over the pandemic.

	(1)	(2)	(3)	(4)
Black	0.125*** (0.012)	0.115*** (0.012)	0.074*** (0.012)	-0.053*** (0.008)
Hispanic	0.186*** (0.010)	0.177*** (0.010)	0.129*** (0.009)	0.030* (0.012)
Asian	0.012 (0.016)	0.000 (0.013)	-0.011 (0.013)	-0.038** (0.012)
Other	0.234*** (0.021)	0.237*** (0.018)	0.187*** (0.017)	0.090*** (0.016)
Post George Floyd	-0.017* (0.007)	-0.007 (0.009)	0.008 (0.010)	0.014 (0.007)
X Black	0.032** (0.011)	0.033** (0.011)	0.034** (0.011)	0.020 (0.011)
X Hispanic	-0.033** (0.010)	-0.036** (0.011)	-0.034** (0.010)	-0.039*** (0.011)
X Asian	0.001 (0.015)	0.000 (0.016)	-0.002 (0.014)	0.003 (0.014)
X other	-0.002 (0.019)	-0.004 (0.019)	-0.002 (0.019)	-0.011 (0.019)
Log new cases in state		0.009* (0.004)	0.012** (0.004)	0.008* (0.003)
Log state unemployment claims		0.011* (0.005)	0.002 (0.005)	0.017** (0.006)
State shelter in place order		0.025 (0.013)	0.019 (0.012)	0.033** (0.010)
Lost work because had Covid			0.342*** (0.016)	0.242*** (0.015)
Reduced household income			0.314*** (0.005)	0.238*** (0.005)
Change in food insecurity			0.178*** (0.003)	0.157*** (0.002)
Have health insurance				-0.072*** (0.005)
Any school age kids				-0.012** (0.004)
Married				-0.080*** (0.003)
Income				-0.054*** (0.002)
Female				0.139*** (0.002)
Age				-0.008*** (0.000)
Constant	1.501*** (0.007)	1.297*** (0.045)	1.248*** (0.049)	1.828*** (0.061)
Observations	987,139	987,139	980,303	930,284

*Table A6: Psychological distress and race/ethnicity: adjusting for post-George Floyd. Regressions also include indicators for survey week and interactions between race/ethnicity and linear week. Standard errors in parentheses, clustered by state. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*