



IARIW 2024

IARIW 2024

Thursday, August 22 – Friday, August 30

Multidimensional Economic Hardships during the COVID-19 Pandemic in the United States

Erdal Asker
(University of West Georgia)

Shatakshee Dhongde
(Georgia Institute of Technology)

Roshani Bulkunde
(Georgia Institute of Technology)

Paper prepared for the 38th IARIW General Conference
August 26-30, 2024

Session 2C-1, The Social Implications of Economic Insecurity I

Time: Tuesday, August 27, 2024 [14:00- 15:30 GMT]

Multidimensional Economic Hardships during the COVID-19 Pandemic in the United States*

Erdal Asker[†]

University of West Georgia

Roshani Bulkunde[‡]

Georgia Institute of Technology

Shatakshee Dhongde[§]

Georgia Institute of Technology

August 9, 2024

Abstract

In this paper, we measure multidimensional hardships experienced by Americans during the COVID-19 pandemic. We use a unique household survey data between 2018 and 2021 to compile information on self-reported economic hardships such as the inability to pay bills or afford health care, unemployment, and experiencing financial strain. We combine the household survey data with state-level data on lockdown measures. We find that a stricter lockdown was associated with a greater number of hardships. During the pandemic, 28 percent or almost 1 in 3 adults experienced multiple hardships. Hardships were particularly high among women, and among Black, and Hispanic populations. Our results underscore the fact that the pandemic compounded hardships experienced by Americans and left a long-lasting impact on their well-being.

Keywords: COVID-19, economic hardships, multidimensional, panel, United States

*We are grateful for the comments received on the paper when it was presented at the annual conference of the Society for Economic Measurement in Milan, Italy, 2023, and at a seminar series at the Kennesaw State University, Georgia, U.S., 2023. All the usual disclaimers apply.

[†]Department of Economics, 1601 Maple St, Carrolton, GA, 30118, easker@westga.edu

[‡]Department of Economics, Old C.E. Building 221 Bobby Dodd Way, Atlanta, GA 30332, rbulkunde3@gatech.edu

[§]Contact Author: Department of Economics, Old C.E. Building 221 Bobby Dodd Way, Atlanta, GA 30332, shatakshee.dhongde@econ.gatech.edu

1 Introduction

A pandemic can have devastating effects, posing significant threats to human life and the global economy. For example, the H1N1 influenza pandemic of 1918–1919 resulted in an estimated 50–100 million deaths ([Morens and Fauci, 2007](#)). In December 2019, a new “coronavirus” outbreak began in Wuhan, China, later identified as COVID-19. This highly contagious and pathogenic viral infection was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020. The WHO estimated that between 1 January 2020 and 31 December 2021, excess mortality globally, that is the full death toll associated directly or indirectly with the COVID-19 pandemic was approximately 14.9 million ([WHO, 2022](#)). The United States of America (U.S.) was one of the worst hit nations by the COVID-19 pandemic. A quarter of the cases detected worldwide were accounted for in the U.S. In 2020, the death rate in the U.S. rose by 17 percent, from 715 deaths per 100,000 in 2019 to 835 deaths per 100,000 ([CDC, 2022](#)). Life expectancy declined by 1.8 years.

The COVID-19 pandemic was not only the worst public health crisis in recent history but it also led to severe economic loss. The U.S. economy suffered one of the sharpest contractions in its history in 2020 during the first wave of the COVID-19 pandemic ([White House Report, 2022](#)). U.S. GDP decreased by 8.9 percent in the second quarter of 2020, the largest single-quarter contraction in more than 70 years ([BEA, 2021](#)). Between March and May 2020, 42 states and territories in the U.S. imposed strict lockdown restrictions to curb the growing spread of the virus ([Moreland et al., 2020](#)). As the economy slowed down, the U.S. saw an unprecedented increase in unemployment rates, which surged from 3.6 percent in the fourth quarter of 2019 to 13.0 percent in the second quarter of 2020 ([Smith et al., 2021](#)). [Silva et al. \(2023\)](#) estimated that the value of the lives lost combined with a loss in the national income, resulted in economic welfare losses to the order of US \$3.57 trillion.

In this paper, we measure multidimensional economic hardships experienced by Americans during the COVID-19 pandemic. The Federal Reserve Board’s Survey of Household Economics and Decision-making (SHED) conducts an annual survey to measure the economic

well-being of U.S. households. We use SHED surveys from 2018 to 2021 to compile data on five self-reported economic hardships. We consider subjective hardships, namely, feeling financial strain and feeling worse-off financially than the previous year. We also collect data on objective hardships such as the inability to pay bills, or afford health care and being unemployed. The SHED data is published annually and contains information on a cross-section of more than 11,000 individuals. However, the survey also repeats some respondents every year. We build panel data from the four survey rounds with 900 or so individuals. This is the first paper, as far as we are aware, that analyzes changes in economic well-being during the COVID-19 pandemic by using i) subjective and objective indicators of economic hardship, ii) panel data to analyze the movement of individuals in and out of hardships during the pandemic and iii) captures statewide variation in the lockdown measures by using data from the Oxford COVID-19 Government Response Tracker (OxCGRT).

A multidimensional approach to measuring well-being is based on the philosophical framework of the capability approach (Sen, 1993). In this approach, poverty is thought of as the absence of one or more of the basic capabilities that are required to achieve minimal functioning in the society in which one lives. The capability approach treats poverty as a lack of endowment (education) instead of as a lack of outcomes (income). The United Nations Human Development Report (HDR) used the approach to publish the Human Poverty Index (HPI) which took into account deprivations in health, education, and standard of living. In 2010, the HPI was replaced by the United Nations Multidimensional Poverty Index (UN-MPI). The UN-MPI is based on the framework proposed by (Alkire and Foster, 2011a). The latest UNDP (2024) report provides MPI estimates for more than 100 countries.

Although the U.S. has lagged behind other countries and does not officially provide estimates of multidimensional poverty, in the last few years, several studies have adopted the UN-MPI to provide estimates of multidimensional poverty in the U.S. ¹ (Dhongde and Haveman, 2017) were the first to provide estimates of multidimensional deprivation in the U.S.

¹Dhongde and Haveman (2022) provide an excellent summary of the literature on multidimensional poverty

during the Great Recession. [Mitra and Brucker \(2019\)](#) and [Glassman \(2019, 2021\)](#) estimated multidimensional poverty in the post-recession period. ([Dhongde and Haveman, 2022](#)) provided spatial trends in multidimensional poverty in the U.S. from 2008 to 2019. During that time, they estimated that 13 percent of non-elderly adults in the U.S. were multidimensional poor. All of these studies covered the pre-pandemic years. They used the U.S. Census Bureau’s Current Population Survey (CPS) or the American Community Survey (ACS) to compile data on indicators of income, high-school education, English fluency, disabilities, and so on, to measure multiple dimensions of poverty. However, these dimensions are not particularly relevant during the pandemic. For our purpose, the SHED data is much more useful to analyze economic hardships during the pandemic.

Some recent studies have used household survey data to measure financial or economic hardships in the U.S. during the pandemic. [Dhongde \(2020\)](#) have used SHED data to measure economic hardship during the pandemic. They used data from a special round of SHED which was conducted in early April 2020, at the beginning of the COVID-19 lockdown. The U.S. Census Bureau conducted a Household Pulse Survey (HPS) during the pandemic. [Kim \(2021\)](#) used HPS data to study the effect of financial hardship and social assistance on mental health and food and housing insecurity during the COVID-19 pandemic in the U.S. [Dhongde and Glassman \(2023\)](#) also used the monthly data from HPS and found that the COVID-19 pandemic had a significant impact on individual’s well-being.

In this paper, we analyze the extent of economic hardships experienced by Americans during the COVID-19 pandemic. We find that during the pandemic, 28 percent or almost 1 in 3 adults experienced two or more hardships. Our estimate is close to other studies [Dhongde \(2020\)](#), [Dhongde and Glassman \(2023\)](#) which estimated about 25 percent of adults with multidimensional hardships during the pandemic. However it is much higher than estimates of multidimensional poverty in the last decade [Dhongde and Haveman \(2022\)](#). Our panel regression estimates show that multidimensional hardships were particularly high in states with stricter lockdown measures. The results of the paper underscore the fact

that the pandemic compounded hardships experienced by Americans and left a long-lasting impact on their well-being.

The paper is organized as follows. In Section 2, we describe both the data sources, SHED and the Oxford Stringency Index. In Section 3, we use cross-sectional data between 2018 and 2022 to analyze the multiple economic hardships faced by Americans. In Section 4, we summarize results based on the panel data. Subgroup analysis is contained in Section 5.2 and we summarize conclusions in Section 6.

2 Data

We use the Survey of Household Economics and Decisionmaking (SHED) to compile data on economic hardships and the Oxford COVID-19 Government Response Tracker (OxCGRT) to compile statewide data on lockdown measures.

2.1 Survey of Household Economics and Decisionmaking (SHED)

Data

SHED is a household survey conducted annually by the Federal Reserve Board in the fourth quarter of each year since 2013 and is publicly available. The survey is conducted online and collects information on a wide range of topics, such as overall financial well-being, income, employment, banking and credit, and so on. The sample comprises of adults aged 18 and above and is representative of the population.² We use SHED rounds from 2018 to 2021.³

We compile data on economic hardships which were particularly relevant during the

²SHED respondents are drawn from Ipsos' online panel using probability-based sampling. We use analysis weights provided in the data. These weights allow for the entire sample to reflect the observable characteristics of the U.S. adult population. They are scaled to add up to the total population of the U.S. adults eligible for this survey. The survey mode did not change during the pandemic. Furthermore, we do not see any significant decrease in response rates to the survey during the pandemic.

³We intentionally do not include data since the pandemic (2022 and 2023) largely because i) the Covid-19 lockdown was almost over in all states by 2022 and ii) in 2022 and 2023, inflation rates soared in the U.S. We suspect that high inflation would certainly economic hardships but that analysis is beyond the scope of this paper.

COVID-19 pandemic. Table 1 shows the survey questions and the possible responses individuals had to choose from. Responses in bold indicate financial hardship. For example, an individual experienced hardship if she cannot pay some bills or is unable to afford one or more healthcare options. The five hardships listed in Table 1 are classified into two groups: subjective and objective hardship. The first two indicators, namely, financial strain and feeling worse-off than last year are subjective and depend on individuals' assessment of their financial well-being. On the other hand, the three other indicators, namely, unable to pay bills, unable to afford healthcare, and unemployment are evidence-based, objective indicators of hardship.

A unique feature of the SHED data is that the current survey year also includes a subset of respondents from the previous year. For example, about one-third of respondents who participated in the 2021 round had also participated in the 2020 round. Similarly, in 2020, one-third of the participants were from the 2019 round. The data contains information on prior year case identifiers for these repeated respondents. Using this feature of the data, we identify the repeated respondents surveyed from 2018 to 2021, to build a panel dataset of about 900 individuals.

2.2 The Oxford Stringency Index

Data on state-wide stringency measures in the U.S. are obtained from the Oxford COVID-19 Government Response Tracker (OxCGRT). The strictness of lockdown is measured using a stringency index, which is based on closure and containment policies. The index is a composite of nine indicators, including school closures, workplace closures, cancellation of public events, restrictions on gathering size, public transport closures, stay-at-home requirements, restrictions on internal movements, restrictions on international travel, and public information campaigns. The index ranges from 0 to 100, with higher levels indicating more stringent lockdown measures. The OxCGRT provides high-frequency data that recorded these indicators daily for all states in the U.S. The lockdown was much stricter and more widespread

across states in 2020 compared to 2021. The average national stringency index was equal to 42.19 in 2020 and declined to 28.20 by 2021.

Figure 1 shows the statewide stringency index averaged over 2020 and 2021. We see significant variation across states in terms of the lockdown stringency. As seen in the figure, the lockdown index was high (41 to 50) or very high (51-60) in many states. States of California, and New York with a high population density also had a high number of COVID-19 cases and had implemented some of the strictest lockdown measures in the country. On the other hand, less populous states such as North and South Dakota, Iowa, and Montana had implemented less restrictive lockdown policies.

3 Economic Hardships

3.1 Hardships over time

Table 2 shows the percentage of adults who experienced hardships between 2018 and 2021. It is based on cross-sectional data from SHED which has over 10,000 participants every year. We find that most economic hardships peaked in 2020 during the COVID-19 lockdown. For example, in 2020, as many as 24 percent of Americans reported hardships in each of the two subjective indicators, namely financial strain or finding it difficult to get by and feeling worse-off than the previous year. Among the objective indicators, unemployment soared from 3 to 14 percent in 2020 and then declined to 7 percent in 2021. Other objective indicators, namely inability to pay bills and inability to afford health care did not peak in 2020 like other hardships. However, a high percentage of respondents reported experiencing these hardships in all four years. On average, 15.8 percent of respondents reported inability to pay bills and 23.8 percent reported inability to afford one or more health care services.

3.2 Relationship between Subjective and Objective Hardships

SHED asks respondents whether they were able to manage financially and whether they felt they were worse-off than last year. We pool together responses from all four rounds and test whether these subjective indicators of hardships were related to the objective indicators. We estimate the following regression model:

$$Y_{ist} = \beta_1 * (IPB)_{ist} + \beta_2 * (IAH)_{ist} + \beta_3 * (Unemp)_{ist} + \beta_4 * (Inc)_{ist} + \beta_5 * X_{ist} + \delta_s + \epsilon_{ist} \quad (1)$$

where Y_{ist} is an outcome of interest for individual i residing in state s in year t . These outcome variables are subjective indicators of hardships, including financial strain and feeling worse off than last year. The objective indicators include $(IPB)_{ist}$ for inability to pay bills, $(IAH)_{ist}$ for inability to afford healthcare, and $(Unemp)_{ist}$ for unemployment. We also test how individual's incomes $(Inc)_{ist}$ affect the subjective indicators.⁴ δ_s represents state fixed effects. Additionally, X_{ist} is a vector of individual characteristics, including gender, marital status, race, place of residence, and household size. ϵ_{ist} represents standard errors, clustered at the state level.

Table 3 summarizes the estimated coefficients from equation 1. We find that hardships in each of the three objective indicators, namely, inability to pay bills and afford healthcare, and unemployment were significant and positively related to each of the subjective hardship. On the other hand, average incomes had a significant and negative relation with experiencing financial strain or feeling worse-off than previous year.

⁴Note the SHED does not have information on income but gives ten broad categories to which a household's income may belong to.

3.3 Multidimensional Hardship Measures

The [Alkire and Foster \(2011a,b\)](#) multidimensional poverty measures, based on a counting approach, are most widely used in the literature.⁵ Using the counting approach, suppose we identify adults who experienced at least two hardships as multidimensionally deprived. We find that the headcount ratio (HCR) was equal to 24.72 percent; that is, on average, between 2018 and 2022, nearly 25 percent or 1 in 5 adults reported experiencing two or more hardships. We also estimate the average intensity index (A) and the adjusted headcount index (M) (see Table A2). All three indices peaked in 2020. On a scale of 0 to 1, the average intensity index (A) in 2020 was 0.58 implying that on average, multidimensional deprived experienced 3 out of 5 hardships. The adjusted headcount index (M) is a product of the headcount ratio (HCR) and the average intensity index (A). In 2020, the adjusted ratio (M) was the highest and was equal to 16.43. This means that the total hardships as a share of the maximum possible hardships the population could potentially experience was 16.4 percent.

In [Figure 2](#), we compare the headcount ratio of hardships (HCR), that is the proportion of individuals with at least two hardships with the headcount ratio of income poverty for adults. We use two income poverty measures, namely, the official poverty measure (OPM) and the supplemental poverty measure (SPM); both poverty estimates are provided by the U.S. Census Bureau. We find that among the adult populations, income poverty rates were much lower than the hardship measure in all four years. In 2020, during the lockdown, 9 to 10 percent of adults were income-poor, but nearly 28 percent of adults reported experiencing two or more economic hardships.

Our results suggest that during the pandemic, individuals who were not income-poor still experienced multiple hardships. Individuals with income above the poverty threshold also felt the financial strain and were worse off than the previous year. Furthermore, we also find that although unemployment rates soared, poverty rates did not increase, mainly because

⁵See ([Dhondge and Haveman, 2017](#)), for detailed formulation of the AF measures

many households received unemployment benefits. According to a [Pew Report \(2022\)](#),⁶ a key reason was the extension of the eligibility for unemployment insurance benefits in the pandemic. Workers usually not eligible for these benefits, such as self-employed workers and independent contractors, were allowed to receive benefits in 2020.

3.4 Overlapping Hardships

In the previous subsection, we identified individuals with two or more hardships. In Table 4, we show the breakdown. We show the percent of adults who experienced one, two, three, four and all five hardships. As seen in Table 4, about 12 percent of respondents experienced two hardships, 8 percent experienced three hardships, and 4 percent experienced four hardships during the four years. The percent of adults who experienced any two, any three, any four, or all five hardships was greater in 2020 than in any other year. Although, on average, less than 1 percent of adults experienced all 5 hardships, in 2020, nearly 2 percent of adults experienced all five hardships.

4 Economic Hardships and Lockdown: A Panel Data Analysis

So far in our analysis, we have used data from the cross-sectional rounds in each of the four years. However, a unique feature of SHED data is that a subset of respondents also participated in prior waves of the survey. In 2021, about one-third of respondents had participated in the fall 2020 survey and so on. Using this feature, we are able to build panel data with about 900 respondents who answered survey questions in each of the four years.

⁶<https://www.pewresearch.org/social-trends/2022/04/20/covid-19-pandemic-pinches-finances-of-americas-lower-and-middle-income-families/>

4.1 Movement in and out of Multidimensional Hardships

In Table 5, we provide a snapshot of how individuals moved in and out of multiple hardships between 2018 and 2020. As seen in the table (column 1), nearly 10 percent of individuals reported experiencing financial strain in all four years. On the other hand, only 0.1 percent reported being unemployed in all four years. Column 2 in the table show the overlap of hardships in 3 consecutive years, namely from 2018 to 2020 or 2019 to 2022. As we decrease the number of years in which hardship was experienced from all four years to three and then to two consecutive years, we find that the percentage of respondents who experienced the hardship increases. A greater percent of respondents (see Column 3) experienced each of the subjective hardships during the pandemic compared with the pre-pandemic years. In 2020, during the COVID-19 lockdown, we find that many respondents experienced hardship for the first time (Column 4). For example, 20.7 percent of respondents reported financial strain only in 2020 and in no other year.

4.2 Panel Data Regression

We use the panel data to examine the impact of the COVID-19 lockdown on multiple economic hardships, including financial strain, feeling worse off, inability to pay bills or afford healthcare, unemployment, and total deprivation. we use the Oxford Stringency Index (OSI) to assesses state-level variation in lockdown severity at in 2020 and 2021. We estimate the following panel regression model:

$$Y_{ist} = \beta_1 * (OSI)_{st} + \beta_2 * X_{it} + \phi_i + \delta_s + \epsilon_{ist} \quad (2)$$

where Y_{ist} represents an outcome of interest for individual i residing in state s in year t , OSI_{st} is a continuous variable with values ranging from 0 to 100. Additionally, ϕ_i represents individual fixed effects, δ_s represents state fixed effects, X_{it} is a vector of individual-level characteristics (including gender of the household head, marital status, race, place of resi-

dence, and household size), and ϵ_{idmt} is a random disturbance term.

The coefficient of primary interest in Equation 2 is β_1 , which shows the relation between lockdown stringency and economic hardships. To account for unobserved time-invariant characteristics, we incorporate individual and state-fixed effects. Additionally, we cluster the standard errors at the individual level.

4.3 Economic Hardships and the Lockdown Stringency

Table 6 presents the impact of the COVID-19 lockdown on various aspects of multidimensional economic hardships, including financial strain, feeling worse-off than the previous year, inability to pay bills, or afford healthcare and unemployment. We also include the total number of hardships as an outcome variable. The average percent of individuals facing each hardship in the pre-pandemic years (2018-2019) is given in the last row as a reference. For example, the estimated coefficient in Column (2) shows that an increase in lockdown stringency is associated with an approximate 0.15 percentage point increase in respondents feeling worse-off than the previous year. This corresponds to a 1.23 percent increase individuals feeling worse-off relative to the control mean from the pre-pandemic years. Similarly, higher stringency of lockdown was associated with an increase of 0.24 percentage points in unemployment, also corresponding to an 8 percent increase relative to the control mean. We find that the stringency coefficient was not significant for financial strain and inability to pay bills. It was negatively related with the inability to afford healthcare. Finally, a one unit increase in the stringency index increased the number of hardships by 0.36 percentage points. These estimates are statistically significant at the 1 percent level.

5 Subgroup Analysis

We divide the panel into subgroups by gender and race and then estimate our main specification (Equation 2) for each subgroup separately.

5.1 Economic Hardships and the Lockdown Stringency by Race and Ethnicity

SHED has data on three categories, Whites, Blacks and Hispanics. In Figure 3, we show how hardships varied by race and ethnicity at the peak of the pandemic in 2020. Overall a higher percentage of Blacks and Hispanics experienced each of the hardship compared with Whites. Between these two groups, a higher percentage of Blacks reported inability to pay bill, and a higher percentage of Hispanics reported inability to afford healthcare.

In Table 7 we summarize estimates of Equation 2 for two groups: Whites and Non-Whites (which includes Blacks and Hispanics). The estimated coefficients are higher in magnitude and more significant among the Non-Whites compared with the Whites. For instance, a stricter COVID-19 lockdown was associated with an increase in the percent of Blacks and Hispanics reporting feeling worse-off by 2.5 percent points. In contrast, that estimate was close to zero and statistically insignificant for the Whites. A stricter lockdown was also associated with an increased unemployment by 36 percent points among Blacks and Hispanics and by 1.4 percent points among Whites. Lastly, a stricter lockdown was associated with increased the number of hardships among the Non-Whites, but it was insignificant for the Whites.

5.2 Economic Hardships and the Lockdown Stringency by Gender

Table 8 presents the estimates separately for female and male respondents in the panel. A higher stringency index was associated with an increase in the percent of females reporting feeling worse-off by 2.6 percent points. In contrast, that estimate was close to zero and statistically insignificant for males. A stricter lockdown was associated with a 2.8 percent points increase in unemployment among females and 2.2 percent points increase among males. The number of hardships increased by 6.4 percent points for females but there was no significant change among males.

6 Conclusions

The COVID-19 pandemic was not only a massive public health crisis but it also had severe economic repercussions. Given the contagious nature of the virus, most of the countries imposed strict lockdown measures which lasted for more months. In the U.S. the lockdown resulted in the closing of several small businesses, retail shops and restaurants, and service heavy industries. As a result unemployment increased sharply. In this paper, we use a unique data to understand the economic hardships experienced by Americans during the lockdown.

We used subjective indicators such as feeling worse-off than previous year as well as objective indicators such as inability to pay bills to take a pulse of the hardships witnessed during the lockdown. More than 28 percent of individuals reported that they experienced two or more hardships in 2020; more than 5 percent reported that they experienced four of the five hardships. Unemployment rates soared in 2020 to 14 percent. Nearly a quarter of respondents reported feeling worse-off than last year. This percentage was much higher than the poverty rates in 2020 indicating that economic hardships were felt by a large proportion of Americans who were not necessarily income poor.

In the panel data analysis we found that the stringency of the lockdown was associated with an increase in the number of hardships experienced by Americans. An increase in the stringency of the lockdown was associated with a significant rise in respondents who were unemployed and who felt worse-off than previous year. Compared with the pre-pandemic years, economic hardships during the lockdown increased significantly among women and among Blacks and Hispanics.

One limitation of the data was that we were not able to analyze the impact of several stimulus payments, expanded unemployment insurance, the expanded child tax credit, and expansions to nutritional assistance programs that were implemented during the pandemic to mitigate some of the hardships. We believe that these stimulus payments were the reason why we did not see a sharp uptick in some of the objective hardship measures such as inability

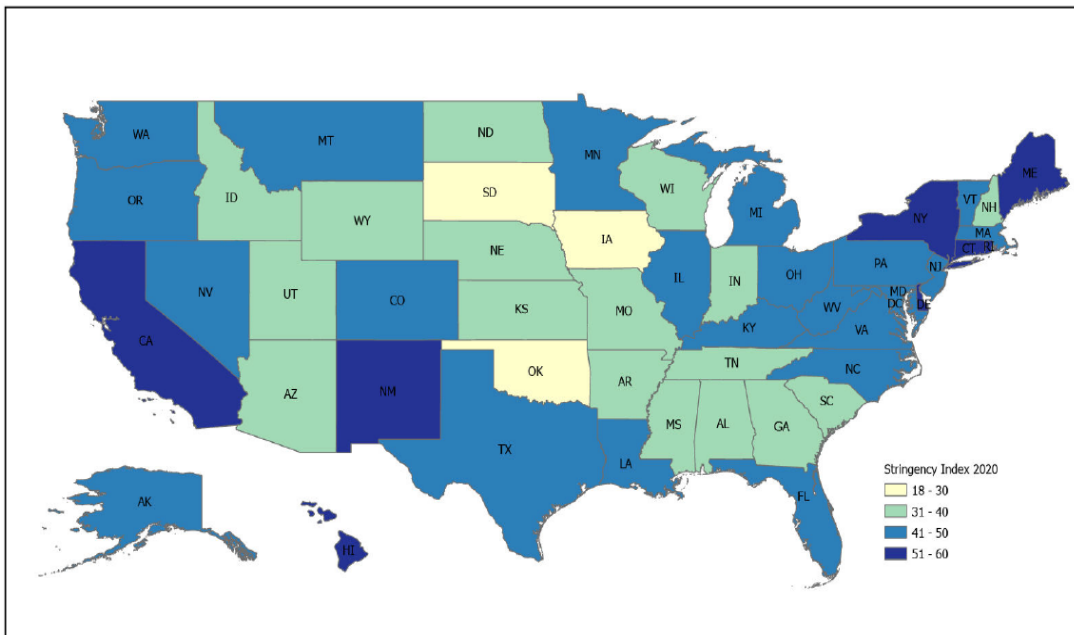
to pay bills or afford health care during the pandemic. However, despite these payments the percent of Americans who reported feeling worse-off than previous years increased from 13 percent in 2019 to 24 percent in 2020. The paper, thus, sheds light on the suffering and economic hardships which are not necessarily captured by the official poverty rate or by statistics on the stimulus programs.

References

- Alkire, S. and Foster, J. (2011a). Counting and multidimensional poverty measurement. *Journal of public economics*, 95(7-8):476–487.
- Alkire, S. and Foster, J. (2011b). Understandings and misunderstandings of multidimensional poverty measurement. *The Journal of Economic Inequality*, 9:289–314.
- BEA (2021). Real Gross Domestic Product. *U.S. Bureau of Economic Analysis*.
- CDC (2022). 2020 Final Death Statistics: COVID-19 as an Underlying Cause of Death vs. Contributing Cause. *National Center for Health Statistics*.
- Dhongde, S. (2020). Multidimensional economic deprivation during the coronavirus pandemic: Early evidence from the united states. *PLoS One*, 15(12):e0244130.
- Dhongde, S. and Glassman, B. (2023). Multidimensional hardships in the us during the covid-19 pandemic. *Social Indicators Research*, pages 1–23.
- Dhongde, S. and Haveman, R. (2017). Multi-dimensional deprivation in the us. *Social Indicators Research*, 133:477–500.
- Dhongde, S. and Haveman, R. (2022). Spatial and temporal trends in multidimensional poverty in the united states over the last decade. *Social Indicators Research*, 163(1):447–472.
- Glassman, B. (2019). Multidimensional inequality: Measurement and analysis using the american community survey. In *Eastern economic association annual conference*.
- Glassman, B. (2021). The census multidimensional deprivation index: Revised and updated. *US Department of Commerce Economics and Statistics Administration*.

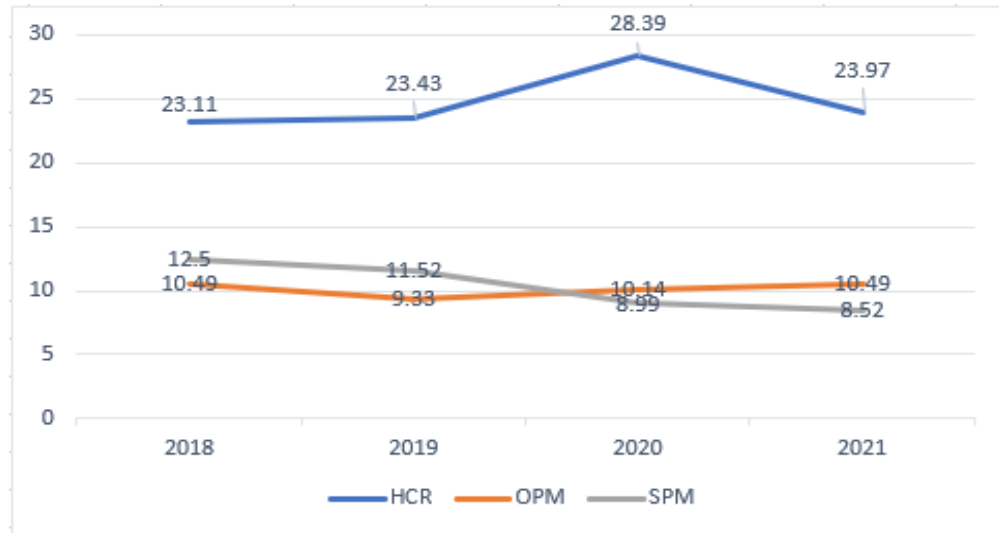
- Kim, D. (2021). Financial hardship and social assistance as determinants of mental health and food and housing insecurity during the covid-19 pandemic in the united states. *SSM-population health*, 16:100862.
- Mitra, S. and Brucker, D. (2019). Monitoring multidimensional poverty in the united states. *Sophie Mitra and Debra Brucker,(2019)"Monitoring multidimensional poverty in the United States"*, *Economics Bulletin*, 39(2):A122.
- Moreland, A., Herlihy, C., Tynan, M., and et al (2020). Timing of State and Territorial COVID-19 Stay-at-Home Orders and Changes in Population Movement — United States, March 1–May 31, 2020. *MMWR Morb Mortal Wkly Rep 2020;69:1198–1203*.
- Morens, D. M. and Fauci, A. S. (2007). The 1918 influenza pandemic: insights for the 21st century. *The Journal of infectious diseases*, 195(7):1018–1028.
- Pew Report (2022). COVID-19 Pandemic Pinches Finances of America’s Lower- and Middle-Income Families.
- Sen, A. (1993). Capability and well-being. *The quality of life*, 30:270–293.
- Silva, S., Goosby, E., and Reid, M. J. (2023). Assessing the impact of one million covid-19 deaths in america: economic and life expectancy losses. *Scientific Reports*, 13(1):3065.
- Smith, S. M., Edwards, R., and Duong, H. C. (2021). Unemployment rises in 2020, as the country battles the covid-19 pandemic. *Monthly Lab. Rev.*, 144:1.
- UNDP (2024). Human Development Report 2023-24. .
- White House Report (2022). Chapter 3: The U.S. Economy and the Global Pandemic. *Economic Report of the President*, page 97.
- WHO (2022). 14.9 million excess deaths associated with the COVID-19 pandemic in 2020 and 2021.

Figure 1: State-wise Variation in the Stringency Index



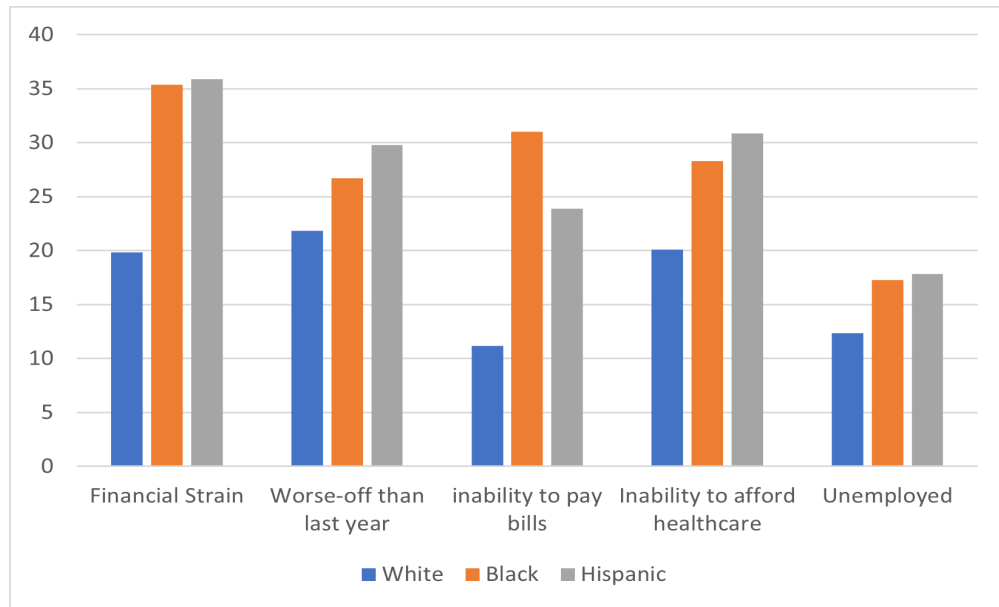
Notes: Map shows the Oxford Stringency Index level by state in 2020. Dark blue indicates that the stringency index was high in that state, while light yellow indicates a low stringency index. Blue and green represent medium stringency index levels.

Figure 2: Headcount Ratio of Multidimensional Hardship and Income Poverty



Notes: The figure shows the percentage of adults who had multidimensional hardships (HCR) or were poor following the official poverty measure (OPM) or the supplemental poverty measure (SPM). The HCR values are based on SHED data and are given in Appendix Table A2. Headcount ratio for income poverty, OPM, and SPM, are based on U.S. Census estimates.

Figure 3: Hardships by Race and Ethnicity



Notes: Figure demonstrates the percentage of individuals belonging to different race and ethnicity for each hardship in 2020.

Table 1: Survey on Self-Assessment of Economic Hardships

Economic Hardships	Survey questions	Responses
Subjective Economic Hardships		
Financial Strain	Overall, which one of the following best describes how well you are managing financially these days?	<ol style="list-style-type: none"> 1. Finding it difficult to get by 2. Just getting by 3. Doing okay 4. Living comfortably
Worse-off than last year	Compared to 12 months ago, would you say that you (and your family living with you) are better off, the same, or worse off financially?	<ol style="list-style-type: none"> 1. Much worse off 2. Somewhat worse off 3. About the same 4. Somewhat better off 5. Much better off
Objective Economic Hardships		
Inability to pay bills	Which best describes your ability to pay all of your bills in full this month?	<ol style="list-style-type: none"> 1. Cannot pay some bills 2. Able to pay all bills
Inability to afford healthcare	<p>During the past 12 months, was there a time when you needed each of the following, but went without because you couldn't afford it?</p> <ol style="list-style-type: none"> 1. Prescription medicine 2. Seeing a doctor or specialist 3. Mental health care 4. Dental care 5. Follow-up care 	<ol style="list-style-type: none"> 1. Yes to any one or more healthcare 2. No to all healthcare
Unemployed	Think about any job in the past 12 months, not just your main job. In the past 12 months, have you gotten laid off or lost a job (including a temporary layoff)?	<ol style="list-style-type: none"> 1. Yes 2. No

Notes: Table shows the survey questions and the possible responses individuals could choose from. The five hardships listed are classified into two categories: the first two columns represent subjective hardships, while the last three columns represent objective hardships.

Table 2: Percent of Adults reporting Economic Hardships over time

	(1)	(2)	(3)	(4)	(5)
Economic Hardships	2018	2019	2020	2021	Average
Financial Strain	24.7	24.4	24.7	22.3	24
Worse-off than last year	13.1	13.4	24	20.2	17.7
Inability to pay bills	16.8	16.1	16.1	14	15.8
Inability to afford healthcare	23.8	24.5	23	23.7	23.8
Unemployed	3.4	3.3	14	7	6.9
No of respondents	11,316	12,173	11,648	11,874	11,753

Notes: Columns show the percent of respondents with economic hardships over time

Table 3: Relationship between the Objective and Subjective Economic Hardships

	(1)	(2)
	Financial strain	Worse-off than last year
Inability to pay bills	0.3562*** (0.0082)	0.2093*** (0.0097)
Inability to afford healthcare	0.2545*** (0.0088)	0.1370*** (0.0066)
Unemployment	0.0562*** (0.0087)	0.2098*** (0.0128)
log(Average income)	-0.0767*** (0.0036)	-0.0241*** (0.0028)
Observations	32,588	32,588
Pre-Pandemic Mean	0.244	0.135

Notes: Table shows the impact of objective economic hardship indicators on subjective economic hardship indicators after controlling for baseline characteristics. The model also includes state-fixed effects, and standard errors are clustered at the state level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Number of Hardships over time

	(1)	(2)	(3)	(4)	(5)
%Adults	2018	2019	2020	2021	Average
Any 1 Hardship	20.19	19.82	19.41	20.82	20.03
Any 2 Hardships	11.83	12.14	12.21	11.52	11.98
Any 3 Hardships	7.53	7.73	8.87	7.33	7.89
Any 4 Hardships	3.43	3.31	5.39	4.31	4.05
All 5 Hardships	0.32	0.25	1.91	0.80	0.81

Notes: All values are given as percent of the deprived individuals in the U.S.

Table 5: Movement in and out of Multidimensional Deprivation

	(1)	(2)		(3)			(4)
% of Respondents	Hardship in all 4 years	Hardship in 3 consequent years		Hardship in 2 consequent years			Hardship in only 1 year
	2018-19-20-21	2018-19-20	2019-20-21	2018-19	2019-20	2020-21	2020
Financial Strain	9.6	11.8	12.3	14.4	14.7	15.6	20.7
Worse-off than last year	1.0	1.8	2.1	3.9	5.2	7.7	17.8
Unable to pay bills	3.0	4.4	3.9	6.9	6.1	6.4	11.5
Unable to afford healthcare	6.1	8.3	7.9	11.5	11.1	10.1	15.6
Unemployed	0.1	0.6	0.3	1.0	1.6	2.5	11.6

Notes: The sample comprises individuals from the SHED data that participated in the survey each year between 2018 and 2021. The table shows the percentage of individual movement into and out of deprivations listed in the first column over various periods. It includes hardship over 4 years, 3 years, 2 years, and only in 2020. The percentages represent individuals that remained in deprivations listed in the first column from 2018 through 2021, as well as combinations of these periods, including between 2018 and 2021 for three years, two years, and specifically in 2020.

Table 6: Stringency Index and Economic Hardships

	(1)	(2)	(3)	(4)	(5)	(6)
	Financial Strain	Worse than last year	Inability to pay bills	Inability to afford healthcare	Unemployed	No. of Hardships
Stringency Index	0.0001 (0.0004)	0.0015*** (0.0004)	0.0005 (0.0003)	-0.0009** (0.0004)	0.0024*** (0.0004)	0.0036*** (0.0011)
Individual Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3488	3488	3488	3488	3488	3488
Pre-pandemic Mean	0.224	0.122	0.136	0.200	0.030	0.711

Notes: The sample comprises individuals in the SHED data who participated in the survey each year between 2018 and 2021. The table presents the impact of the initial COVID-19 lockdown on multidimensional economic hardships, listed in the first row. These estimates are derived from the main regression model (Equation 2). Detailed information about the outcomes can be found in the Appendix. The table shows the results with controls, including the gender of the household head, marital status, race, place of residence, and household size. All specifications include individual and state-fixed effects. Standard errors, reported in parentheses, are clustered at the state level. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 7: Stringency Index and Economic Hardships: Race and Ethnicity

	(1)	(2)	(3)	(4)	(5)	(6)
	Financial Strain	Worse than last year	Inability to pay bills	Inability to afford healthcare	Unemployed	No. of Hardships
Panel A: Non-white						
Stringency Index	0.0009 (0.0006)	0.0025*** (0.0007)	0.0010 (0.0006)	-0.0015** (0.0006)	0.0036*** (0.0007)	0.0065*** (0.0019)
Observations	1,306	1,306	1,306	1,306	1,306	1,306
Individual Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Mean (2018 and 2019)	0.25	0.146	0.179	0.241	0.031	0.847
Panel B: White						
Stringency Index	-0.0007 (0.0005)	0.0005 (0.0005)	0.0001 (0.0004)	-0.0003 (0.0004)	0.0014*** (0.0004)	0.0010 (0.0012)
Observations	2,161	2,161	2,161	2,161	2,161	2,161
Individual Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Pre-pandemic Mean	0.204	0.103	0.102	0.168	0.028	0.605

Notes: Table shows the subgroup analyzes performed by dividing the main sample into subgroups based on races. The table presents the impact of the initial COVID-19 lockdown on multidimensional economic hardships, listed in the first row. These estimates are derived from the main regression model (Equation 2). Detailed information about the outcomes can be found in the Appendix. The table shows the results with controls, including the gender of the household head, marital status, race, place of residence, and household size. All specifications include individual and state-fixed effects. Standard errors, reported in parentheses, are clustered at the state level. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table 8: Stringency Index and Economic Hardships: Gender

	(1)	(2)	(3)	(4)	(5)	(6)
	Financial Strain	Worse than last year	Inability to pay bills	Inability to afford healthcare	Unemployed	No. of Hardships
Panel A: Female						
Stringency Index	0.0006 (0.0006)	0.0026*** (0.0008)	0.0006 (0.0006)	-0.0002 (0.0007)	0.0028*** (0.0006)	0.0064*** (0.0019)
Observations	1,151	1,151	1,151	1,151	1,151	1,151
Individual Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Mean (2018 and 2019)	0.225	0.126	0.151	0.206	0.024	0.733
Panel B: Male						
Stringency Index	-0.0003 (0.0005)	0.0008 (0.0006)	0.0004 (0.0004)	-0.0014*** (0.0005)	0.0022*** (0.0005)	0.0017 (0.0014)
Observations	2,335	2,335	2,335	2,335	2,335	2,335
Individual Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Pre-pandemic Mean	0.219	0.12	0.127	0.185	0.0312	0.682

Notes: Table shows the subgroup analyses performed by dividing the main sample into subgroups based on gender. The table presents the impact of the initial COVID-19 lockdown on multidimensional economic hardships, listed in the first row. These estimates are derived from the main regression model (Equation 2). Detailed information about the outcomes can be found in the Appendix. The table shows the results with controls, including the gender of the household head, marital status, race, place of residence, and household size. All specifications include individual and state-fixed effects. Standard errors, reported in parentheses, are clustered at the state level. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$.

Table A1: Stringency Index by State and Year

State	Stringency Index		State	Stringency Index	
	2020	2021		2020	2021
Alabama	31.19	19.07	Nebraska	35.74	16.04
Alaska	44.75	34.80	Nevada	41.42	25.09
Arizona	35.21	19.69	New Hampshire	39.56	28.29
Arkansas	32.95	24.04	New Jersey	43.42	27.12
California	51.30	39.18	New Mexico	57.73	33.90
Colorado	42.17	27.56	New York	59.00	35.75
Connecticut	51.35	30.18	North Carolina	47.52	32.72
Delaware	50.01	31.55	North Dakota	30.02	21.10
Florida	40.61	18.51	Ohio	48.98	26.23
Georgia	39.80	25.33	Oklahoma	28.98	32.57
Hawaii	58.04	55.71	Oregon	43.19	34.20
Idaho	39.21	22.83	Pennsylvania	43.11	23.72
Illinois	43.61	30.02	Rhode Island	55.33	36.23
Indiana	39.33	25.61	South Carolina	34.27	22.64
Iowa	26.39	16.64	South Dakota	18.38	10.99
Kansas	38.48	30.62	Tennessee	39.16	23.56
Kentucky	48.28	30.52	Texas	42.48	30.97
Louisiana	41.32	43.13	Utah	32.31	20.30
Maine	54.93	29.50	Vermont	48.18	31.69
Maryland	48.85	28.37	Virginia	40.04	26.93
Massachusetts	48.18	37.67	Washington	44.81	39.11
Michigan	46.95	28.14	Washington DC	49.80	34.99
Minnesota	45.79	28.73	West Virginia	41.15	22.39
Mississippi	35.57	20.04	Wisconsin	36.96	30.25
Missouri	36.48	24.54	Wyoming	38.91	27.52
Montana	40.43	21.78			

Notes: Oxford Stringency Index is calculated based on nine metrics: school closures, workplace closures, cancellation of public events, restrictions on public meetings, closure of public transport, stay-at-home requirements, public information campaigns, restrictions on internal movements, and international travel controls. The table shows the average Stringency Index by state and year.

Table A2: Multidimensional Hardship Measures over time

	(1)	(2)	(3)	(4)	(5)
Measures	2018	2019	2020	2021	Average
Head Count Ratio (HCR)	23.11	23.43	28.39	23.97	24.72
Average Intensity Index (A)	0.53	0.53	0.58	0.55	0.55
M=HCR×A	12.31	12.39	16.43	13.26	13.58

Notes: This table gives the estimates of hardship measures over time. All HCR values are given as percent of the households in the USA deprived in two or more indicators.