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The Wisconsin Economic and Mental Health Experiences of the COVID-19 Pandemic

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Executive Summary

The COVID-19 shock is like no other. The effects of the pandemic have been crippling to the labor force globally and especially in the U.S., which has suffered the worst hit with 7+ million people infected. For some segments of the population the effects of COVID-19 go beyond the containment measures and threaten security in key areas of wellbeing: food, shelter, income, and mental health. The primary purpose of this report is to examine these threats to human wellbeing and suggest potential pathways for economic and mental health stimulus that will aid faster recovery.

Wisconsin has had 278,843+ confirmed cases with its seven-day average reaching 5,828+ on November 10th and the infection rates are still climbing. Most containment measures have now moved to voluntary enforcement making the likelihood of being exposed to the virus greater, which has an impact on economic and psychological wellbeing. Business are open with the safety guidelines of masking, physical distancing, and remote work arrangements, however, there are still economic fallouts to consider. In this report I will focus on the threats to— food, employment, housing, and mental health security experienced by Wisconsinites for the weeks between April 23rd and July 21st. While our cases have surpassed these early days of the public health emergency to a more severe phase of the pandemic with a rising threat to healthcare industry's capacity to meet this challenge, hindsight maybe useful in eliciting cooperation from Wisconsinites. The secret to mitigating a crisis of this magnitude is orderly collective cooperation.

As mentioned in previous paragraphs I will explore, with care, the impact of this unprecedented exogenous shock and its disruption to an individual's sense of security, be it economic or psychological. Being aware of this impact is important for several reasons. First, it arms policy makers with an alternative perspective that takes stock of recovery strategies while attending to a more severe increase in outbreaks. It also exposes potential sources of distress among vulnerable populations while ensuring the continuance of containment measures. Second, findings could keep workers and firms matched. This is critical for a faster recovery because the consequences of prolonged business closures are permanent unemployment, which in turn translates into additional state spending on job re-training. Third, as the pandemic makes people anxious or worried they become more pessimistic and risk averse. Risk aversion means cautious spending which can prolong an economic downturn and lead to a slower economic recovery. Fourth, mental health is extraordinarily important to ensure a productive workforce. Factors such as depression and loss of interest have been shown to contribute to huge costs to employers in form of presenteeism and absenteeism [1,2].

Because the COVID-19 pandemic is an unprecedented shock, state policies have to prioritize the public health response as the dominant policy until the public health crisis is contained. This means economic policies need to cushion household income and at the same time offer support to firms in distress [15]. Understanding how the crisis affects firms and household aids public health policy in the following ways: guidelines for worker-employer safety, resilience training, quick containment strategies for potential outbreaks, channeling resources to worker wellbeing, ensuring food security, and housing security. Once infection rates reach the target controls, economic policies should shift to stimulating the economy in sectors that are hit the most—for example, Wisconsin hospitality and food services. The latest Wisconsin household pulse survey shows three areas of weakness: housing, food, and mental health [11].

My analysis shows that COVID-19 pandemic has had real economic fallouts in key areas: job loss, food security, and housing security. I also find that there is a large exogenous increase in anxiety levels across all income groups because of COVID-19. Other mental health dimensions like worry, loss of interest, and feeling down show a lagged increase over the 12 weeks from April 23th to July 21st. Results point to correlation between threats to economic security and mental health. This has some policy implications. Because the public health response needs to be a priority as infection rates continue to climb, economic policies have to address fallouts from public health policies and offer continued basic security for all. Additionally, there need to be well placed positive psychological shocks such as reassurances for Wisconsinites, so they recover quickly from bouts of anxiety and worry. This will, in the long run, facilitate a faster economic recovery.

Key Points:

The key take away from this analysis is that needed public health responses to COVID-19 have economic implications.

1. The economic fall outs from COVID-19 are: job loss, lack of confidence in ability to pay for rent or mortgage, and real or perceived food insecurity. Job loss is highest among self-employed and private sector which make up 67% of the workforce.
2. Anxiety afflicts 60% of Wisconsinites from both bottom and top income groups.
3. Worry has a lagged effect on Wisconsinites and this rise in worry correlates to the potential ending of unemployment benefits from COVID-19. It afflicts more than 50% of Wisconsinites.
4. A rise in loss of interest and feeling down are most prominently felt among Wisconsinites post July 2nd. Over 45% of Wisconsinites experience for several days each week.
5. Threats to food, housing, and job security increase mental distress.
6. Rapid recovery from anxiety is likely once the public health crisis ends. However, recovery from worry, feeling down and losing interest may be slower because these mental states persevere.
7. Slower recovery from mental distress will affect labor productivity and consumption which may prevent a “V-shaped” economic recovery.

Data and materials: My primary data for this analysis is the Household Pulse Survey conducted by the Census Bureau for weeks following the pandemic, April 23th to July 21st. There are twelve weeks of data available and a new phase of data collection started August 19th and is ongoing but not used in this analysis.

Statement of Public Policy Relevance

This analysis advances two potential areas of public policy. First, economic policies need to support three areas where the pandemic delivered a severe hit: job security, housing security and food security. Second, public health policies should deliver positive stimulus through work or social networks for mental health. Both kinds of stimulus are needed to make a faster V-shaped economic recovery.

I. Introduction

The first novel coronavirus case came to the state of Wisconsin on February 5th 2020. On March 12th Wisconsin went into a state of public health emergency. Since those initial days, Wisconsin has been dealing with the public health and economic consequences of this unprecedented shock to the State's economy. In this analysis I use the household pulse survey to examine the consequences of the public health response to COVID-19 such as fallout in basic economic security and psychological security.

The great lock-down went into effect on March 12th for Wisconsin and its extension was overturned by the Wisconsin State Supreme Court on May 13th. For these two months there were severe restrictions in labor mobility and business operations. A recent study has shown that the great-lockdown has resulted in a 20% contraction of business activity[3] and the subsequent overturning of the extension to the Stay-At-Home-Order by the supreme court resulted in a doubling of business activity for sectors that were the worst hit[4]. This finding is suggestive of a gap in understanding between medical professions, epidemiologists and policy makers about the importance of prioritizing containment policies—and buffering the inevitable economic fallout, and the inevitable mental distress.

In Wisconsin, a second lock-down is highly unlikely and infection rates are increasing with daily confirmed cases added in October 13th of 3279+ or more. As cases continue to threaten physical well-being fear and anxiety may cause significant disruptions to labor and consumption[5]. In the long run, heightened risk-aversion will dampen faster economic recovery. However, increasing infection rates mean that in the short-run containment of the virus, testing for the virus, treatment of the virus, and vaccination from the virus will remain priority policies while economic policies and mental health interventions must take a supporting role and remain poised for optimal functioning once the public health crisis abates. To do this effectively, stimulus efforts have to include both economic and mental wellbeing.

To begin the dialogue along these observations I use the household pulse survey to show the economic and mental health experiences for Wisconsinites. I approach this analysis with a focus on threats to economic and psychological security. I end with a discussion of how well placed economic and mental health stimulus can aid a speedier recovery.

II. Threats to Basic Security

As Wisconsin continues with containment policies, I take stock on the impact of COVID-19 on three basic sources of economic security: employment, food, housing and the four dimensions of psychological security: anxiety, worry, feeling down, and losing interest. The implications of the stay at home order are immense and affect different populations differently. In this brief I divide the Wisconsin population into two groups: those with incomes below \$75,000 and those with incomes above. Because I want to report on

aspects of basic security I limit the focus of this analysis to be descriptive of and on Wisconsin only[6].

Economic and Psychological Security

In Wisconsin, COVID-19 has potentially affected psychological and economic security. It is difficult to separate out the effects of COVID-19 on mental health and economic well-being. In this report I impose a sequence where I examine the correlation between psychological effects of COVID-19, economic security, and prescriptions for economic and psychological recovery. In particular, I want to examine two pathways: how the COVID-19 shock affects economic security and then how awareness of the threats to economic security impacts mental health.

The two main aspects of security of focus are: our ability to fend for ourselves, and the way we navigate stress when presented with crisis. All else equal, a crisis like the COVID-19 pandemic threatens our sense of wellbeing at the very basic level throwing us back to a cave-man phase of human evolution. A “safer at home order” is just that—take shelter in your cave, hopefully one has enough resources to feed and care for oneself, and still when occasion calls for it go hunt and gather food. Clearly this is a frightening crisis because it has caught us off-guard, and it is not over quickly like an earthquake, or a hurricane. It is here to stay until we invent the technology (in form of treatments and vaccinations) to restore our physical health. There were no mechanisms to prepare for a pandemic of this kind. I argue that fear is a natural response to this crisis and the inability to extinguish it to meet the changed environment is a form of mental distress. I will explain the differences in mental states explored. Before I do this I first explain the macro-economic environment that supports economic wellbeing to mitigate this crisis as well as examine the micro-economic behavior that results from confronting this kind of public health crisis and the fear-based decisions that maybe resultant.

Macroeconomic Policies

Generally, countries have two mechanisms available to make sure an economy is well-functioning. The government typically uses fiscal policies to fix the economy, and the central banks uses monetary policies to fix the economy. Because of the impact of COVID-19 the American economic spine is out of alignment and needs adjustment. Well-functioning markets mean that labor, land, and credit markets work for everyone without friction. If they don't governments or central banks intervene with fiscal and monetary policies. In a perfect world where there is no uncertainty, these markets would not need insurance because one can predict returns to investment perfectly. However, we do usually face uncertainty, so insurance markets exist to smooth our consumption and investment risks over time. This means insurance markets also have to work for everyone.

The U.S. confirmed its first COVID-19 case in January, 2020. The country went into lockdown during the 2nd quarter of 2020. The U.S. economy contracted by 31.7% and unemployment rates neared 10%. As 2nd quarter ended it appeared the economy would return to normal as COVID-19 cases started to decline—and it did give early indications of recovery. At the end of the 2nd quarter the economy started re-opening though restaurants, gyms, and houses of worship did not open to full capacity in many states. Retail stores also operated in limited capacity. Many Universities and schools have opened partially and adopted hybrid models of teaching and functioning. Throughout this period several fiscal and monetary policies were followed. Unfortunately, new confirmed cases started picking up again in September, culminating in the executive branch of the government contracting the virus. Uncertainty now marks the country even more with the presidential election scheduled to take place in November.

Since March 2020, the government and Federal Reserve have employed several fiscal and monetary tools. To provide context for my analysis I briefly summarize fiscal and monetary policies pursued, the full list is posted on the International Monetary Fund website¹ in detail for each country.

Several fiscal policies have been implemented these included paycheck protection, cushioning unemployment benefits, deferment of employee portion of social security taxes, relief from evictions and foreclosures. Small business protection funds were also dispersed to retain workers, grants and loans, Coronavirus specific economic relief funds to help households maintain cash flow.

During this same period several monetary policies were used to keep financial markets well-functioning. These included a lowering of the funds rate, expansion of overnight and term repos to stimulate economic growth¹. The Federal Reserve also made lending easier while implementing stress tests on the financial system to ensure proper debt-liquidity ration authorizing banks to use their liquidity buffers to offer support to those affected by COVID-19. The Federal Reserve's COVID-19 regulatory actions include lowering the community bank leverage ratio to 8 percent. Fannie Mae and Freddie Mac, two leading mortgage and industry lending institutes, have announced assistance to borrowers, including providing mortgage forbearance for 12 months, waiving related late fees, suspending reports to credit bureaus of delinquency related to the forbearance, suspending foreclosure sales and evictions of borrowers for 60 days, and offering loan modification options.

¹ Federal funds rates are interest rates banks and credit unions use to lend their reserves to other financial institutions overnight without collateral. If the Federal Reserve lowers it too much, then inflation could creep in creating a secondary problem; because they are uncollateralized and lent during crisis the lowering of the funds rate can lead to serious financial crisis if the borrowing institutions fail to repay. Thus, these instruments are typically used sparingly to keep the financial markets stable.

Both these fiscal and monetary policies pursued at the federal and central bank level have also their supporting counterparts at the state government level.

Microeconomic Behavior

In these analyses I draw attention to microeconomic behavior in three ways: consumption, labor, and the ability to take on risk. All three form the basis of microeconomic theory. By assumption a person maximizes his utility by choosing her consumption and labor hours (leisure hours) conditional on the income she earns. She has an eye out for future consumption and so engages in savings behavior for which she may be willing to take on riskier investments for better returns, thus saving for potentially better circumstances in the future or to navigate large future exogenous shocks like the ones we are experiencing now. The COVID-19 pandemic has imposed a direct income hit to many Americans. Even for those Americans who have been able to retain their jobs, COVID-19 has resulted in a consumption hit and an anticipatory savings boost. COVID-19 has disrupted food consumption via a direct income hit for those who lost their jobs and a supply hit for others through the closing of restaurants, choice grocery store and stock piling of groceries, and the ability to travel to specialty stores. Job losses have also affected households' ability to pay for rent and mortgage.

A large exogenous shock like this also has the potential to alter our risk preferences. We may become risk-averse or the high levels of uncertainty can cause us to change our risk preferences. Much of economic theory depends on the assumption that a person's risk preferences are stable over time. Our willingness to take on risk affects labor market outcomes, consumption behavior, health outcomes, and indulgence in addictive behaviors among other things. These in turn affect macroeconomic policies. Countries that are extremely risk averse have lower total factor productivity[20,21]. Also, risk-averse individuals are less likely to be self-employed and less willing to take on entrepreneurial activities. COVID-19 will have a tendency on average to make people risk averse. Markets rely on having a good mix of risk takers or it will affect GDP via total factor productivity. In simple terms total factor productivity is the boost to aggregate output (GDP) conditional on the capital investment, and hours of work we put in for a given technology. So, we can see if people are risk-averse they will invest less capital, if they are struggling with mental distress their labor will be less efficient and both will drive down aggregate output—and thus making recovery slower. This has an important implication should policymakers use neuro-plasticity to mitigate COVID-19 pandemic to reduce risk-preference-volatility? The answer depends on what mental health indicators show us about the potential for quick economic recovery.

Mental Health Measures

In this section, I want to use psychometric and clinical measures to define and understand the psychological conditions of anxiety, worry and depression precisely because the PUFs survey uses four questions to measure these three conditions non-

clinically. Once the definitions are clear I describe each survey question and then explain their limitations for interpreting the observed trend in the population. I have to exercise care in how I interpret these questions and their significance for economic and psychological recovery because the PUFs questions are non-clinical. The clinical definitions are critical to understanding psychological recovery which in turn facilitates an economic recovery.

The clinical diagnosis tools and psychometric scales use validated scales like Spielberger Trait Anxiety Inventory (STAI), Hospital Anxiety Depression Scale (HADS), Beck's Depression Inventory (BDI), positive-negative affect scale (PNAS) among others. These psychometric scales typically have a series of questions that hang together to form a scale. Typically, questions are not individually administered—they are administered as a group of questions to get at an underlined condition. The minimum number of questions in a grouping are 3 and maximum around 20. Administering only one or two of a series of questions separately like the PUFs survey does not have clinical diagnostic power, however, it could be informative of a population trend. In this analysis I will focus on the population trends of four mental health conditions that PUFs provides data for and not the clinical diagnoses of anxiety, worry and depression.

The survey has a truncated version called PHQ-2 which is associated with depressive disorder. The two questions that inform depressive disorder are feeling down and losing interest. The second truncated scale is GAD-2 which is associated with generalized anxiety disorder. The two questions that inform generalized anxiety disorder are feeling anxious and worrying. I explain fear as distinct from the other psychological conditions because it has been argued as a potential barrier to economic recovery[8]. It makes sense to start with defining fear because it is intrinsically the first viscerally felt emotion when faced with COVID-19 pandemic.

Neuroscience tells us that fear can take two forms phobic fear and normative fear[16]. Early on in the pandemic I would argue that most of us, unless we were formally diagnosed with phobic fear, faced normative fear. As the pandemic has grown we may exhibit phobic fear if we are struggling to navigate the changed world around us.

Goolsby and Syverson (2020) argue that fear has interfered with a rapid economic recovery. They could be right, but I also offer a counter argument that fear is a level effect. It will only persist until the containment measures for COVID-19 start working consistently. Fear is heightened as uncertainty of COVID-19 remains pervasive in our environment but with time and exposure fear will extinguish for the vast majority of the affected population[16]. And so, the observed fear effect should level off once the pandemic threat subsides. For this reason, not having fear questions in the PUFs survey doesn't undermine the analysis presented in this report.

In the annexed appendix we define each anxiety, worry, feeling down, and loss of interest. To conclude I should add anxiety is often co-morbid with depression. Worry is a

core component of both depression and anxiety. So, these four questions are trying to get at depression and anxiety in the population.

Figure 1: Potential Causal Pathway COVID-19 Pandemic, Public Health, Economic Shock, Mental Health, and Economic Recovery

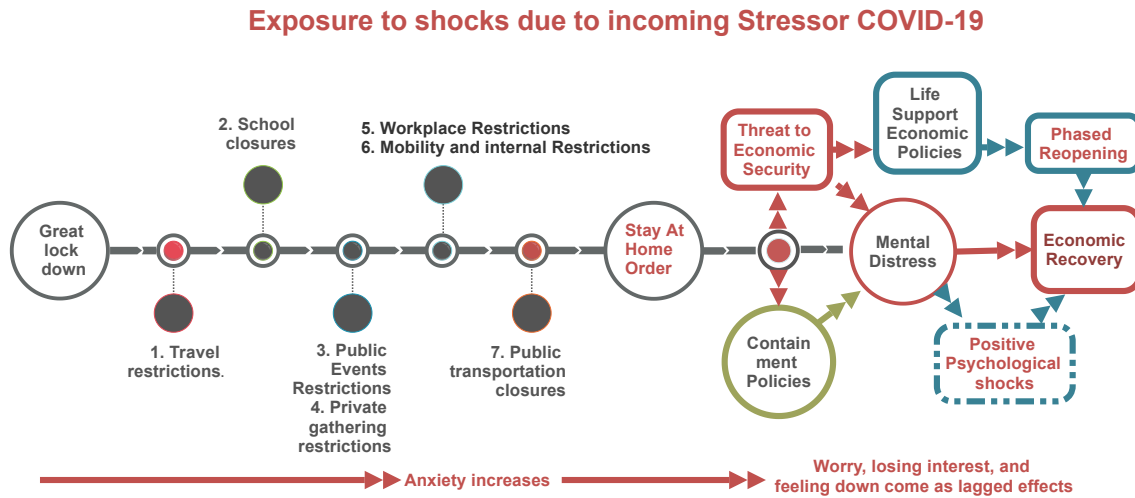
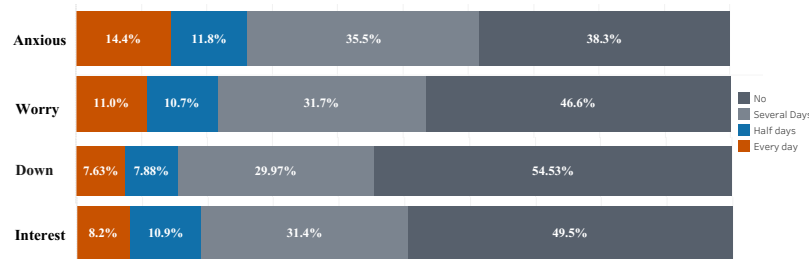


Figure 1, describes the COVID-19 pandemic and road to mental and economic recovery. The first part of the figure shows the progression from an incoming stressful environmental cue of the COVID-19 pandemic to the current economic recovery phase. The first containment measure, travel restrictions, resulted in a disruption of business activities, tourism and other travel related economic activities. The second step was school closures—this could potentially create labor disruptions for parents, unemployment for school workers, and disruption in work-home balance. It should be thought of as a labor productivity hit. Third, public event restrictions and private gathering restrictions would feed into labor productivity hits, mental health hits, firm activity disruptions, and public health gains in safe containment. Fourth, workplace restrictions and mobility restrictions which also affects mental health, and labor productivity. Fifth came restrictions to, in workplace and community, the ability to be around people; its direct effect would be to mental health, and labor performance. Finally, going into Stay-At-Home-Order anxiety levels would have a strong level effect. The Stay-At-Home-Order marks the start of the economic threat to security, the pursuit of containment measures, both of which could feed into mental distress beyond anxiety. The threats to economic security were mitigated with supportive economic policies, however, the mental distress has not been met with systematic intervention from public health agencies (see dotted box in figure1).

While the economy is opening in phases the economic recovery depends on containment of virus, treatment of virus, vaccination from virus, recovery from economic fallouts both at the individual and societal level and undoing any mental health hits that workers and

families take during this crisis. Figure 2 shows for all mental states except being down the survey U.S. population has several or more days being anxious, worried, and disinterested. And a significant 49% of Americans report being down over the survey period.

Figure 2: Unconditional mental health bad days % of total surveyed population



Source: Own Calculations using Household Pulse Survey

Note: Excludes missing values

1. Employment Experience and Job Security

One significant consequence of a policies targeted to contain a pandemic of this magnitude is that there are labor market consequences. In Wisconsin, the stay at home order went into effect on March 25th and stayed in effect until April 24th on top of this schools closed on April 17th—both these produced labor market disruptions. Wisconsin’s employment dropped by 15.9% on April 22nd which is the biggest hit in Wisconsin history[7]. Deller (2020) in his recent study points out that for Wisconsin labor impact has been relatively low compared to the nation because of its industrial base and that the biggest hit from COVID-19 has been absorbed by the retail sector[7]. Closing of restaurants, bars, schools, beauty, retail and other service-oriented sectors caused a huge spike in unemployment claims. As of September, the claims have been steadily declining to approximately 2000 claims, still markedly higher than the 120 claims filed in September 2019 (Kuhl, 2020).

Table 1 shows two things, first the distribution of workers by work sector and then job loss by sector. Job loss here is framed as follows: “Have you, or has anyone in your household experienced a loss of employment income since March 13, 2020?” People responding to this question aren’t necessarily unemployed in the classical sense. To be counted as being unemployed requires losing a job and having to look for a new job. The responses to this job loss question include workers displaced because of COVID-19 who may remain matched to their firms.

The table on the left shows that 58% of workers are employed by private employers, in Wisconsin, and this is representative of Wisconsin pre-COVID-19 crisis.

Table 1: COVID-19 related Job Loss by Work Sector

%Total	Work Sector	Work Status	
		COVID-19: Work	COVID-19: Work loss
15.1%	Government	71.0%	29.0%
15.1%	Non-Profit Organization	65.7%	34.3%
58.0%	Private	61.9%	38.1%
9.5%	Self-Employed	45.6%	54.4%
2.3%	Working in Family Business	61.8%	38.2%
	Grand Total	62.3%	37.7%

Source: Own calculations using Household Pulse Survey

Table 1 shows that the COVID-19 impact on job loss by sector were as follows: at 54% the self-employed took the biggest job loss hit, 29% of government employees report job loss, 38% private sector workers and family business workers lost their jobs, and 34% non-profits and the self-employed workers lost their jobs. This means government employees had the most job security though all work sectors were hit severely. There are many reasons for high unemployment among these sectors—the combination of the great lockdown, travel restrictions, and safe-at-home order affected these work sectors disproportionately. If a workers’ employment was dependent on customer patronage, serving people, offering care, tourism, retail, beauty or hospitality then they faced a bigger economic hit. Where remote work arrangements were possible jobs seemed more secure. It is important to note that for the self-employed this crisis may make them more risk averse. Though this data does not tell us how job loss is related to occupation.

Table 2: Expectation of Job post-COVID-19

	Post-COVID19: Expect Job	Post-COVID19: Expect Job Loss	% COVID-19 Job Loss
COVID-19: Work	94.3%	5.7%	60.3%
COVID-19: Work loss	43.4%	56.6%	39.7%
Grand Total	75.3%	24.7%	

Source: Own calculations from Household Pulse Survey

Table 2 offers a different perspective where the respondents are asked about their level of job security: their current work status and expectation of their future work status. First, 39.7% of sampled Wisconsin workers lost their jobs because of COVID-19. Of those who currently have a job 94% expect to keep their jobs, and of those who have lost their jobs only 43% expect a job post COVID-19. This speaks to the level of anxiety respondents report experiencing. Beyond the rise in the COVID-19 cases, the death rates associated with COVID-19, and a persons’ health status, the economic outcome of current job loss and expectations of job loss in future contribute to mental distress in Wisconsin. There

are several reasons for the 43% to believe their job loss is permanent: the main ones being that the CARES Act and work protection are perceived to be temporary solutions. Given uncertainty associated with the duration of the pandemic, and safe distancing policies this pessimistic outlook maybe be justified. Once again, we draw the readers' attention to the difference between temporary COVID-19 related job loss and real unemployment—in Wisconsin, the unemployment rate as of August was closer to 6.2% a huge drop from April when the unemployment rates were at 13.4%.

The trick here is to reduce the scaring effects of temporary unemployment on mental health dimensions like anxiety, worry, depression, and disinterest so there is optimism and resilience among the temporarily unemployed workers. Put differently, both individuals and the economy need to make a 'V' shaped recovery to return to economic equilibrium. This recovery fundamentally depends on workforce resilience.

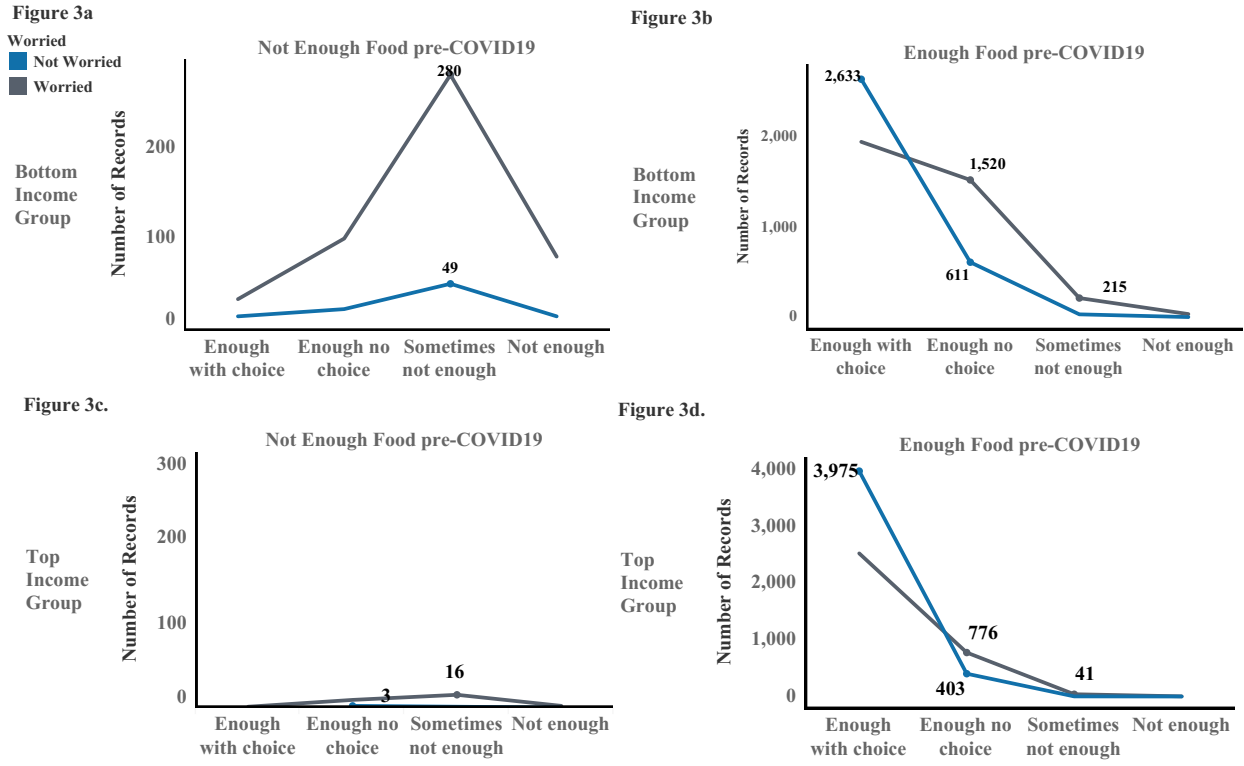
2. Food security

Because of lock-down there have been disruptions to the food chain across SES and the health gradient. The disruptions have happened at many levels, supply chain for grocery stores, restaurant closures, and income shortfalls for some segment of the population. In the household pulse survey food sufficiency is framed as follows: "In the last 7 days, which of these statements best describes the food eaten in your household?" 1) Enough of the kinds of food (I/we) wanted to eat; 2) Enough, but not always the kinds of food (I/we) wanted to eat; 3) Sometimes not enough to eat; 4) Often not enough to eat. Worry is a Likert scale that are spent worrying over a 7-day period: 1) none, 2) several days, 3) over half the days, 4) every day.

Figure 3 plots 5 graphs separating respondents into 4 groups: Figure 3a—shows conditional on not having enough food pre-COVID19 and belonging to bottom income group, how worried respondents are about current post-COVID-19 food sufficiency; Figure 3b—conditional on having enough food pre-COVID-19 and belonging to bottom income group, how worried respondents are about current post-COVID-19 food sufficiency. Figure 3c and 3d repeat this for the top income group. Figure 3e shows the percent of respondents without enough food in each level of worry by week of survey.

Comparing Figures 3a and 3c we can see that very few respondents from the top income groups report COVID-19 related food shortages. The ones that do report food shortages might actually experience food shortages because of restaurant closures or supply constraints at grocery stores. Interestingly, a vast majority in the top income group worried about not having enough food even before the COVID-19 pandemic.

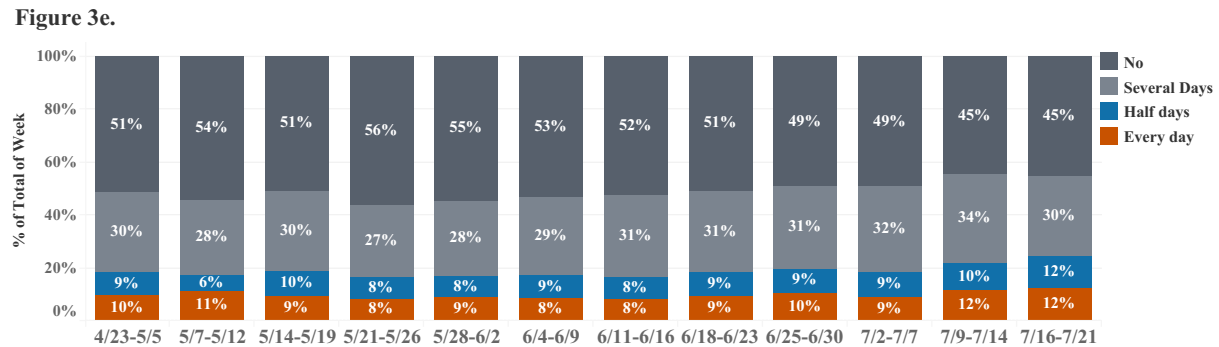
Figure 3: Food security in the Wisconsin post COVID-19



Source: Own calculations using data from Household Pulse Survey

Note: Worry takes on a dichotomous value 1 if you are worried and 0 if you aren't worried any day of the week. Worry 2 is scale 1-4.

Note: Panel 1a-1d. shows reported current food sufficiency on x-axis by worry, conditional on prior food sufficiency, and number of observations on y-axis. Panel 1e shows percentage of total observations per week of worry scale



For the respondents with current COVID-19 related food shortage we can see the vast majority reported sometimes not having enough. This same group tends to be worried about not having enough food. Comparing Figures 3b and 3d we can see most Wisconsin respondents who have enough food are not worried for half or more days. Figure 3e shows weekly worry levels and percent of respondents. First, we can see that Supreme Court ruling overturning the extension of Safer at Home Order on May 13th results in an immediate increase in worriers by 3.4%, as non-worriers drop from 54.2% to 50.8%. And this increase in worriers doesn't last because the following week the 56% of the sampled Wisconsinites report not being worried. However, the trend of non-worriers decreases as the weeks continue to end the survey period with a majority 54% report worrying at least several days of the week.

Table 3a. Transition Matrix: Pre-COVID-19 food sufficiency to current food sufficiency

Pre-COVID19 Food Sufficiency	Current Food Sufficiency				
	Enough with choice	Enough no choice	Sometimes not enough	Not enough	
Enough with choice	85.7%	12.9%	1.2%	0.2%	77.5%
Enough without choice	14.5%	78.5%	6.3%	0.7%	17.4%
Sometimes not enough	7.5%	24.4%	63.0%	5.1%	4.1%
Not enough	8.6%	5.0%	25.9%	60.4%	1.0%
Grand Total	72.2%	22.6%	4.2%	1.0%	

Source: Own calculations using Household Pulse Survey

Note: Sometimes not enough + Not enough = 5.16% of Wisconsin population April 23rd - July 21st

Table 3b. Weekly fluctuations in food sufficiency

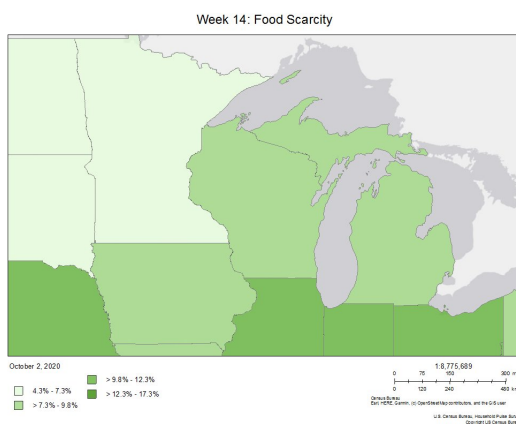
	4/23-5/5	5/7-5/12	5/14-5/19	5/21-5/26	5/28-6/2	6/4-6/9	6/11-6/16	6/18-6/23	6/25-6/30	7/2-7/7	7/9-7/14	7/16-7/21	Grand ..
Enough Food	95.0%	96.0%	95.5%	94.4%	95.7%	96.0%	93.5%	94.9%	94.5%	94.9%	94.0%	93.4%	94.8%
Not enough Food	5.0%	4.0%	4.5%	5.6%	4.3%	4.0%	6.5%	5.1%	5.5%	5.1%	6.0%	6.6%	5.2%
	Supreme Court Ruling					Infection rates rising							

Source: Own calculations Household Pulse Survey. Food Scarcity August 19th - September 14th = 9%

In Table 3a I present a transition matrix that illustrates pre-COVID19 food sufficiency against current food sufficiency. Overall there are not dramatic shifts in food sufficiency for Wisconsin. The biggest change is a 22.6% of Wisconsinites reporting not having food choice, compared to 17.4% pre-COVID-19. The levels of food insufficient Wisconsinites remain at 5.16%.

If we focus on weekly fluctuations in food sufficiency for Wisconsin, Table 3b, we see that the reopening week June 11th to June 9th had an increase in food insufficient respondents and the closing week the survey also saw a percent increase. Food insufficiency seems to be relatively stable for Wisconsin. It is important to separate out underlined worry or anxiety from COVID-19 generated worry, anxiety or mental distress. Figure 4 shows, using August 19th – September 14th phase 2 data, that the percent of Wisconsinites experiencing food scarcity is 9% this is up from the previous week which was at 6.7%¹¹. This means as cases rise COVID-19 related food scarcity is rising which could potentially lead to higher anxiety and worry levels.

Figure 4: Food Scarcity in Wisconsin



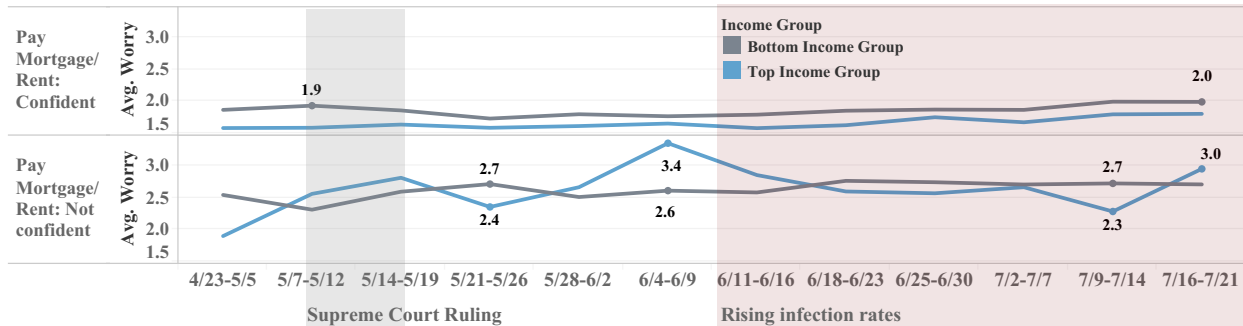
Source: Household Pulse Survey data tool

https://www.census.gov/data-tools/demo/hhp/#/?measures=FIR&s_state=00055

3. Housing Security

Turning to the next COVID-19 related threat to economic wellbeing—housing where I find that those with mortgages or rent report higher levels of anxiety or worry. To this end we also examine what portion of respondents feel that they are not confident about paying mortgages or rent. Of all the respondents 86.5% are confident they can pay their mortgage during this crisis and 13% of respondents are not confident they can pay their mortgage. Figure 5 plots mean worry by confidence in ability to pay mortgage and income group. We can see that after the supreme court ruling against an extension of the Safer at Home Order, Wisconsinites who were confident about paying mortgage remain within several days of worry throughout for low- or high-income groups—mean worry ranges from 1.5 – 2.0. In the group not confident to pay mortgage: top income group shows great level of variability in worry levels over the 12 weeks of survey period than low income group. Both groups on average several or more days worrying. Anxiety levels are also high for those who are not confident they can pay the mortgage (not shown) but mortgage or ability to pay rent drives worry for most respondents.

Figure 5: Confidence in ability to pay mortgage or rent, by worry and income group



Source: Own calculations from Household Pulse Survey

Note: Worry takes on the value 1 = none, 2 = several days, 3 = half days, 4 = every day.

In Table 4, I document the weekly percent of respondents by mortgage categories for whom worry progressively worsens. For example, if we look at the respondents who report worrying every day in the confident to pay mortgage group it ranges from 6.45% to 10.75% with respondents who report worrying increasing as the weeks progress. In the not confident to pay mortgage group those that worry everyday range between 27.7% to 36%. Even the percent that worry half days a week are higher for the group that is not confident to pay mortgage. Table 4 shows tenure security is a big factor in high levels of worry compared to those who have tenure security.

Table 4: Mortgage by Worry State

Confidence Mortgage Worry	4/23-5/5	5/7-5/12	5/14-5/19	5/21-5/26	5/28-6/2	6/4-6/9	6/11-6/16	6/18-6/23	6/25-6/30	7/2-7/7	7/9-7/14	7/16-7/21	
Pay Mortgage/Rent: Confident	No	52.7%	53.8%	52.2%	56.6%	55.0%	52.8%	54.0%	52.4%	49.4%	49.7%	43.6%	45.3%
	Several Days	30.5%	28.6%	30.0%	27.9%	28.7%	31.8%	32.2%	30.4%	31.1%	32.9%	34.8%	31.6%
	Half days	8.4%	7.3%	9.5%	8.3%	8.3%	8.8%	7.3%	9.1%	9.6%	9.7%	10.8%	12.4%
	Every day	8.4%	10.4%	8.3%	7.2%	7.9%	6.6%	6.4%	8.1%	9.9%	7.7%	10.9%	10.8%
Pay Mortgage/Rent: Not confident	No	23.8%	28.3%	13.5%	12.2%	18.6%	15.8%	18.7%	15.3%	11.4%	12.6%	16.0%	14.7%
	Several Days	32.7%	30.2%	39.9%	40.0%	37.1%	28.9%	34.7%	31.4%	35.1%	38.9%	39.7%	30.3%
	Half days	15.8%	13.2%	18.9%	16.7%	16.5%	19.7%	18.7%	22.9%	22.8%	15.8%	12.2%	19.3%
	Every day	27.7%	28.3%	27.7%	31.1%	27.8%	35.5%	28.0%	30.5%	30.7%	32.6%	32.1%	35.8%

Source: Own calculations using Household Pulse Survey

Note: Worry takes on the value 1 = none, 2 = several days, 3 = half days, 4 = every day.

The phase I survey ends with 85% of the respondents who are not confident they can pay their mortgage worry as compared to 54% of respondents who can confidently pay their mortgage. Worry is an increasing trend for both groups. This means, ceteris paribus, lack

of tenure security from its initial perception of the start of COVID-19 to end of survey period has an increasing in intensity effect. This can be seen by looking at the weekly percentage who worry every day increases as does the percentage of those who worry half the days compared to start of survey period. This trend continues in phase II of the household pulse survey Wisconsin ranks pretty high in likelihood of eviction or foreclosure is 46% according to recent estimates in the survey¹¹. This means for this segment of population housing insecurity is a credible threat and a big source of worry.

4. Mental Health and Income Effects and Self-reported Health effects.

The first observation from the data on Wisconsin is that along all four measured dimensions—*anxiety, worry, loss of interest and feeling down*—over a 7-day period, COVID-19 related effects on mental health are a level effects for job loss. We divide our sample of Wisconsinites in two groups those who have lost a job because of COVID-19 and those who have not. Then we look at the mental health effects due to job loss in Figure 6 over income and self-reported health.

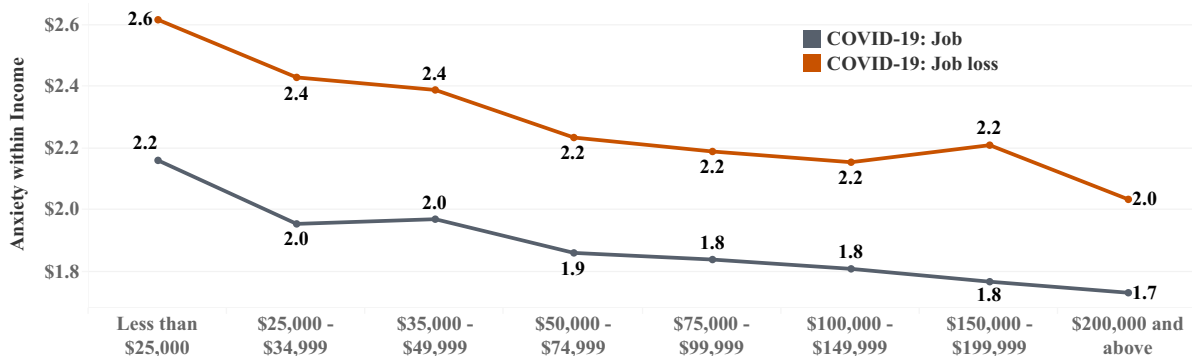
Figure 6-ab: Mental Health, Self-reported Health Effects by Job Status



Source: Own calculations using household pulse survey.

Figure 6a and 6b plot the average within group anxiety and worry levels: employed respondents with good self-reported health report having several days with anxiety as compared to those with excellent and very good health. Worry on average afflicts those with fair and poor health if a respondent is employed. In the unemployed group several days of anxiety is the central tendency even if the respondents are in very good health; worry, on the other hand, becomes a central tendency for those in good, fair and poor health. It is interesting to note that anxiety has a higher-level effect than worry, feeling down, or losing interest—this holds across all demographic dissections of the data. This means there is a COVID-19 level effect of raising anxiety for everyone, *ceteris paribus*.

Figure 6c: Income, Job Status and Average Anxiety Levels



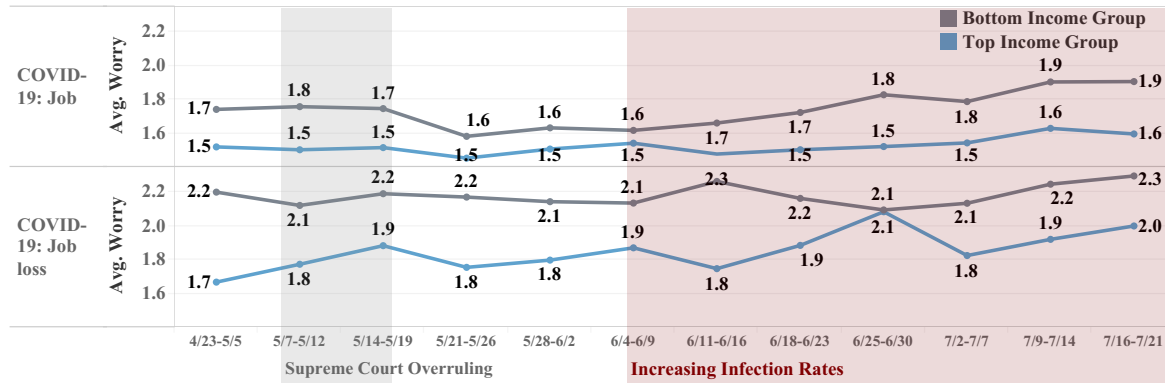
Source: Own calculations using Household Pulse Survey

COVID-19 related job loss is 40% of the sample, it affected across all income groups—27% of respondents with incomes over \$200,000 also lost their jobs. Figure 4c, plots anxiety levels by income level and job status. First, losing a job due to COVID-19 creates a level increase in anxiety across all income groups. Anxiety is the highest for respondents in the bottom income group; especially, for respondents with income less than \$50,000. If job loss was a consequence of COVID-19, then the anxiety levels are elevated by a magnitude irrespective of income group. Those with income less than \$50,000 irrespective of job status experience several days of anxiety. Observing elevated levels of anxiety and worry begs a question: do we treat this elevated mental distress along the four dimensions as an exogenous shock where once the threat of COVID-19 dissipates mental health returns to its baseline pre-COVID-19 state?

Perhaps it depends on several factors which this dataset is not equipped to answer, however, literature on stress and resilience does point to a mental ‘V’ shaped recovery as being the function of a persons’ ability to extinguish external stimuli. There is an innate proclivity to extinguish negative stimuli slower than positive stimuli. This has important implications for the timing of positive environmental social shocks as a means to aid those affected adversely (Davidson R. J. and McEwen 2012, and Lapate R. et al. 2011). We address this briefly in the discussion.

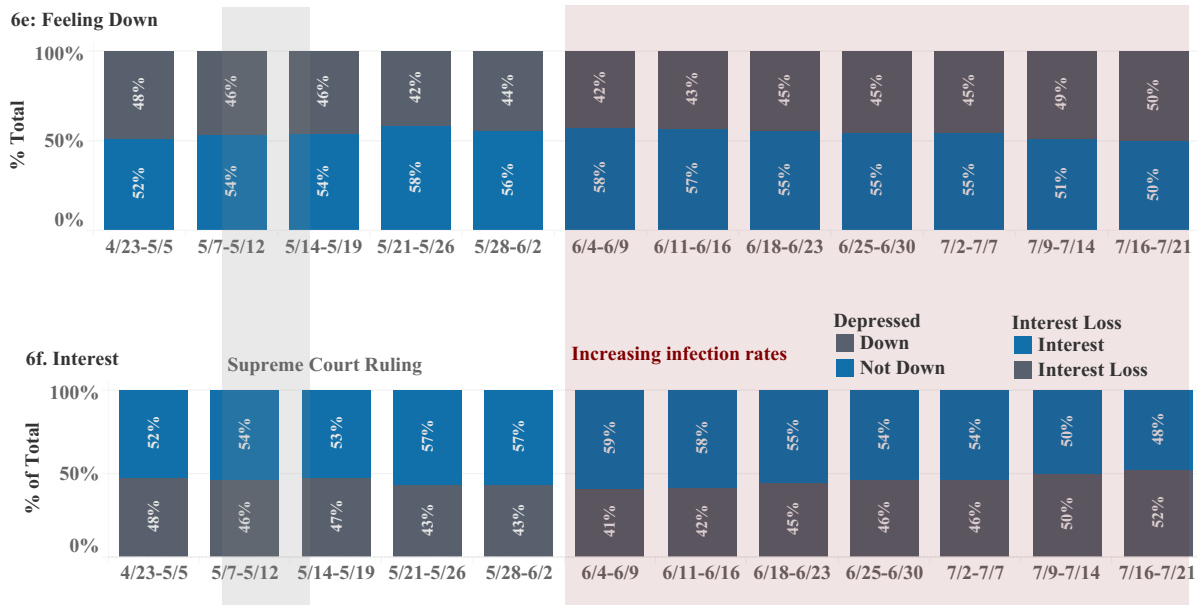
Figure 6d shows that the weekly increasing trend for worry as infection rates increase is irrespective of job status. Recall worry is a scale that ranges between 1 to 4. An average score between 1 to 2 means some people experience several days of worry days of the week; an average between 2 to 3 means respondents worry between several days a week to half days a week; an average between 3 to 4 means respondents worry more than half the days of the week. Worry seems to be the most persistent mental distress among respondents. In presence of a job loss, the bottom income group experiences worry for several days of the week.

Figure 6d: Weekly Worry by Income Group



Source: Own calculations Household Pulse Survey

Figure 6e-f: Weekly trends in feeling down and losing interest.



Source: Own calculations Household Pulse Survey

Figures 6e and 6f plot feeling down and losing interest as dichotomous scales where 0 represents those who never experience it and 1 represents those who experience for several days, half the days or every day. We see in June the percent of respondents experiencing feeling down or losing interest rises systematically. The survey weeks end July 21st and in this end date 50% of Wisconsin residents felt down. According to the national health interview survey only 4.5% of Americans reported feeling down in the 1st quarter January – March 2020. In April 23rd – July 21st over half Wisconsin residents report feeling down. This is a significant mental health crisis. The NIHS survey frames its question as Percentage of regularly having feelings of depression for adults aged 18 and

over, United States, 2020 Q1, Jan-Mar2. And 52% of Wisconsinites experience loss of interest as a consequence of COVID-19. This is also a significant increase and potentially an alert to committing resources to the study of mental health.

Table 5 shows that worry has an increasing trend for the whole second half of the twelve-week data collection period from 6/2/2020 onward. Worry is the only mental state that has this persistence quality. Chronic worry will dampen economic growth in the following ways: it could disrupt sleep, contribute to presenteeism, make a person risk averse, and delay recovery from a previous worry stimuli[1,2,12,13]. Overall worry maybe a stronger COVID-19 plus economic fallout effect and the faster extinguishing mental states such as anxiety maybe a pure COVID-19 effect. It is concerning that, after detrending mental health states, more than 40% of Wisconsinites report experience being down or losing interest several days of the week consistently with each weekly cross-section, over 50% report being worried, and over 60% report being anxious several or more days of the week.

Being down and losing interest among 40% of the labor force is very costly because these mental states are likely to perseverate. Again, the inability to extinguish adverse external stimuli will take a long run toll on labor productivity and risk preferences which will affect consumption patterns. In combination it affects GDP from two pathways—firm productivity and consumption of goods. Because of lower output per labor hour firms will produce less goods and services. Less goods and services mean less is available for consumption. Then because feeling down and losing interest make consumers more risk averse and want to consume less; consumption of goods will fall. Both will contribute to a slower economic recovery[1,2,13].

Table 5. Anxiety and Worry from April 23rd - July 21st

	4/23-5/5	5/7-5/12	5/14-5/19	5/21-5/26	5/28-6/2	6/4-6/9	6/11-6/16	6/18-6/23	6/25-6/30	7/2-7/7	7/9-7/14	7/16-7/21	Grand ..
Not Anxious	38%	40%	38%	41%	41%	43%	39%	41%	37%	37%	32%	34%	38%
Anxious	62%	60%	62%	59%	59%	57%	61%	59%	63%	63%	68%	66%	62%
	+	-	+	-	-	-	+	-	+	-	+	-	
	+	-	+	-	+	+	+	+	+	+	+	+	
Not Worried	51%	54%	51%	56%	55%	53%	52%	51%	49%	49%	45%	45%	51%
Worried	49%	46%	49%	44%	45%	47%	48%	49%	51%	51%	55%	55%	49%
		Supreme Court Ruling					Infection rates rising						

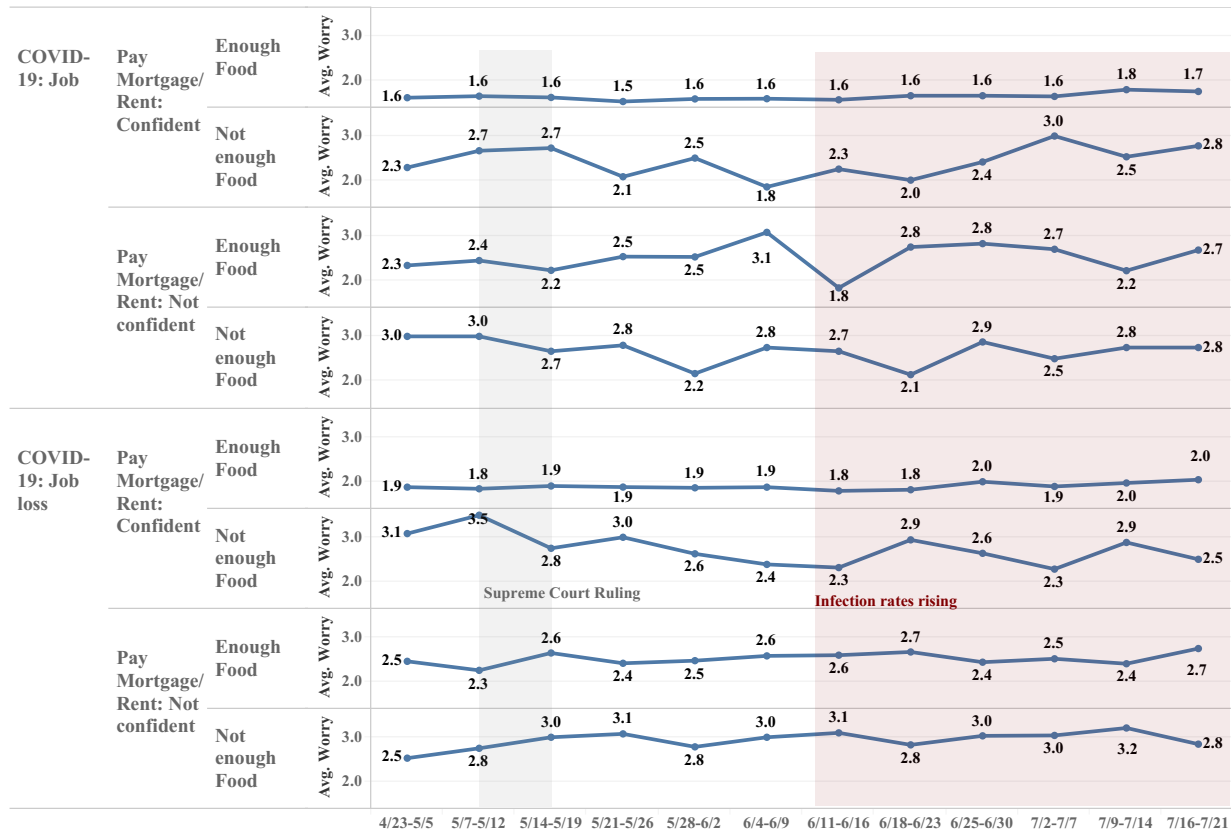
Source: Own calculations Household Pulse Survey

² Because this data is repeated cross-section where each household is only interviewed twice in a row—it is hard to make statements about individual respondents. This analysis discusses the central tendency among sampled Wisconsinites. To really determine if emotions are persistent for an individual we would need panel data and the individual would have to exhibit a pattern of three or more weeks with an upward or downward trend in a mental state.

5. Combined Effects of Job Security, Food Security, Housing Security, and Worry

The understanding of mental health effects of COVID-19 and its correlation to low income requires parsing out the contributions of each as a feedback into another. Visually, I illustrate how threats to economic safety might affect mental health. In the previous sections I argued that anxiety may have a big COVID-19 level effect for all income groups. In Figure 7 we show how separating the pieces of job loss, potential threat to housing security, and food security affect worry which I posit comes into being as a lagged effect once economic consequences of the public health shock (or any other exogenous shock such as earthquakes, fires and so on) are felt.

Figure 7: Job Status, Housing Security, Food Security and Worry



Source: Own calculations Household Pulse Survey

The stay at home order resulted first in job loss for many; and thus, the first felt economic hit at the individual or household level. In Figure 7, starting with the group that have a job and feel confident about being able to pay their rent or mortgage thus secure in one basic need housing—we can see those that are food secure tend not of have bad days worrying. On a scale of 1 through 4 they all fall below 2 which means the

majority in the group have very few days worrying. If the job secure, mortgage/rent secure face food insecurity then the vast majority in the group are worried several days of the week, and the majority worried varies weekly but stays above threshold level 2 and below threshold level 3. Note the number of respondents in this category are only 1.6% of the Wisconsinites. Among those who have jobs but aren't confident about their ability to pay mortgages, several days of worry is common across all weeks, if food security is an issue within this group that worry intensifies for half the days. Next turning to the group with COVID-19 related job loss, if there is confidence in ability to pay mortgage and enough food then worry is not a problem for a majority in this group. If there is food insecurity, then several days of worry creeps in closer to July. If there is no confidence in the ability to pay mortgage, then having enough food or not having enough food does not matter worry levels fluctuate weekly but they are several days a week for those with food security and over half the days for those without food security. For all groups July 7th as infection rates increase worry increases and shows an increasing trend.

III. Discussion

In this essay I aimed to highlight the importance of paying attention to the economic and mental health effects COVID-19. I argued that the mental health response to COVID-19 is both a level and lingering effect. All four dimensions of mental health are elevated as a response to the COVID-19 shock. This result raises a critical question which is will these levels return to a pre-COVID19 level. The answer to this question depends on understanding the sources of perceived or real threat to psychological security. The rising number of cases is only one source of threat which alters behavior making Wisconsinites risk averse. Risk aversion can result in changes in consumer and worker behavior causing a slow-down of economic recovery.

With exogenous shocks like COVID-19 it is possible to have a 'V' shaped recovery as Barro (2020)¹⁴ shows using the Spanish flu as an example. However, a 'V' shaped recovery means economic activity has to return to normal pre-COVID19 levels. This requires micro-economic behavior and macro-economic policies to work predictably. At the root of economic behavior and policy prescriptions lay stable risk preferences. A recent analysis in Illinois and Iowa shows that the 'fear effect' has a definite dampening effect on economic recovery^[8]. Here I showed that COVID-19 has elevated anxiety for everyone and it is a level effect. This means it won't change unless something else in the environment changes. The vast majority of Wisconsinites report feeling anxious several days of the week. I have also shown that worry closely follows it and like anxiety it is independent of SES, however, it is a significant for those in the bottom half of the income distribution (incomes <\$75,000).

Parsing further the SES effects of worry we find that it is significant source of mental distress to those who have lost their jobs, do not feel confident in their ability to pay for their housing, and face food shortages. I further illustrate that feeling down and losing interest become significant for those in bottom income groups starting late July. Consistently those feeling down or losing interest represent over 40% of the Wisconsin

population. This I argue is an important factor to point out. Because both feeling down, and loss of interest are associated with presenteeism and absenteeism both of which directly impact labor productivity and consumption behavior. While anxiety will have consumption effects in the short and medium run, public health containment measures such as masking and safe distancing would facilitate a ‘V’ shaped recovery from anxiety. Chronic worry, feeling down or losing interest perseverate and thus preventing a mental ‘V’ shaped recovery from the adverse effects of COVID-19.

Wisconsin started the month of October with the highest number of confirmed cases added, 2887, and the U.S. president has been confirmed with coronavirus. Public health pandemic policies will dominate the Wisconsin and U.S. landscape until the disease is contained. Government role in this present crisis is to prioritize containment from this virus, test the public, invest in vaccines and treatments, and when ready vaccinate its citizens. They can also channel resources to ensure adequate economic safety nets are in place, keep the central banks sound, provide strong messages to calm and reassure its citizens, and continue to request cooperation from its citizens. While we Americans wait for this pandemic to pass, we need to now more than before to do all we can collectively to fill our spiritual tanks, strengthen our sense of virtual community, cooperate with public health policies so we can together aid a ‘V’ shaped recovery. I have in this brief argued the economic fallout is one-piece, mental health is the second piece. Both have to work together to get through this kind of challenge that we, as global citizens, are facing for the first time since the Spanish flu.

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Appendix:

Fear

Fear is activated when faced with uncertainty or the unknown. Fear has physiological components—racing heart rate, sweating, pupil dilation, behavior avoidance, and heightened environmental vigilance[16]. Fear triggers stress responses like fight, flight, fright, or bonding. In relation to COVID-19 all these responses are likely to be triggered in varied combinations. We are being asked to physically distance and it is often proposed as social distancing. This is likely to trigger in many the need to socially bond with in-person gatherings when staying-at-home is optimal, and it can also cause social isolation when social connection is optimal. This environmental stressor by its very nature may trigger any or all of these responses in us appropriately or inappropriately

depending on our ability to respond to the COVID-19 threat. Conflicts may arise with it a desire to fight; the desire to withdraw (flight), we may feel paralyzed (fright) and incapable of meeting daily cues; and our social and work connections (bonding) have already been disrupted altering the way we feel socially connected or loved.

Neurosciences tells us that fear can take two forms phobic fear and normative fear[16]. Early on in the pandemic I would argue that most of us, unless we were formally diagnosed with phobic fear, faced normative fear. As the pandemic has grown we may exhibit phobic fear if we are struggling to navigate the changed world around us.

Goolsby and Syverson (2020) argue that fear has interfered with a rapid economic recovery. They could be right, but I also offer a counter argument that fear is a level effect. It will only persist until the containment measures for COVID-19 start working consistently. Fear is heightened as uncertainty of COVID-19 remains pervasive in our environment but with time and exposure fear will extinguish for the vast majority of the affected population[16]. And so, the observed fear effect should level off once the pandemic threat subsides. For this reason, not having fear questions in the PUFs survey doesn't undermine the analysis presented in this report.

Anxiety

Anxiety question in PUFs is not a typical clinical or psychometric tool. I use it to instrument for anxiety, so I can make population trend inferences. Typically, the self-reported anxiety trait scale (STAI) is administered using the 20 items. According to Heller et. al. (2018) STAI measures trait anxiety levels and has questions including worry, tension, apprehension and nervousness. The household pulse survey (PUFs) uses anxiety as a question to measure number of days spent in apprehension and nervousness. It does not ask about tension which is physiological process felt in the body, just like apprehension and nervousness. The PUFs anxiety question is not a clinical diagnosis nor a self-reported measure of trait anxiety. To make statements that have clinical power we would need to use clinical tools like HADS, PNAS, among others. So, saying that the population has high levels of anxiety based on the PUFs survey does not imply that the population has clinical anxiety disorder. The PUFs question, however, is a good empirical instrument for trait anxiety. Heller et. al. (2018) argues that trait anxiety is associated with affective instability and variability, so it doesn't have a persistent quality. This implies that once the COVID-19 crisis is under containment control anxiety levels should return to normal without leaving lasting effects on the economy or the psyche. This is how we may interpret this one question in PUFs.

Worry

Worry unlike anxiety does not extinguish once the negative stimulus leaves—it perseverates. This means detecting high levels of worry in the population could have lasting effects on a rapid economic recovery. Worry is a mental process that is activated by repeated negative thinking about the future and it is a precursor to depression.

According to Davidson, Fox and Kalin (2007) worry is a cognitive process that is at the core of a formal diagnosis of anxiety disorder. Questions about worry also appear in validated instruments like BDI, HADS, STAI among others. In the PUFs context, the framing of the question allows for a direct look at self-reported perception of worry. It doesn't say anything about a clinical diagnosis of anxiety or depression. The proper interpretation of this variable would be to document the central tendency in the population of an activation of future oriented chronic negative thinking which may lead to an increase in the prevalence rates of anxiety disorders or depression. Increased prevalence of anxiety disorder or depression will slow down economic recovery through two pathways: lowered labor productivity and lowered consumption of goods and services.

Loss of Interest

Loss of interest is a symptom of depression and part of a larger group of questions used for diagnosing depression. Loss of interest arises when a person is unable to sustain positive affect, has pervasive symptoms of negative affect, and is unable to recover from a stressful event. All of these mean current or future labor productivity impairments which can slow down economic recovery. People suffering from a loss in interest multiple days in a row may not respond to positive stimulus in their environments and may not recover with rapidity as those who are able to sustain positive states of mind. Loss of interest is a failure to anticipate positive incentives that sustain an appetite for positive goal setting and achievement despite negative environmental stressors. Prolonged loss of interest could lead to a clinical diagnosis of depression which will have observable economic consequences in the form of lowered labor productivity, lowered interest in healthy investments, increased risk taking in addictive behaviors and lowered appetite for healthy consumption.

Down

Like loss of interest, feeling down/depression is one question asked from a list of questions in the HADs or BDI questionnaires. Depression if left unchecked will slow down economic recovery more than anxiety, worry or loss of interest. Because the PUFs survey frames their question as the number of days a person has felt down or depressed in a seven-day interval I think it is important to go into detail how depression affects functioning, in particular, labor productivity.

Davidson et. al. (2002) discusses the regions of the brain that get affected in depression. They argue that feeling down, being depressed, has to do with hyper- or hypo-activation these regions in the brain: the pre-frontal cortex (PFC), the anterior cingulate (ACC), the hippocampus, and the amygdala. If the incoming stimuli hypo-activates the PFC then, positive goal orientation becomes challenging. Positive goal orientation is needed to sustain motivation during adverse situations. The ACC is a bridge between attention and emotions; attention is needed for prioritization of incoming information and

sustaining positive executive functioning. Hippocampal dysfunction may result in context-inappropriate emotion regulation, meaning carrying an appropriate emotion such as fear or anxiety over COVID-19 exposure well beyond testing negative and quarantine period. Or continuing to feel sad over COVID-19 related job loss after returning to work. The current uncertainty of duration of the pandemic has elevated the stress levels for many. Which means elevated cortisol in our system which for some may result in a decrease in hippocampal volume or damage to the hippocampus—resulting in hippocampal dysfunction. The amygdala where coordination of response to stimuli and contingencies reside—hyperactivation of this region in the brain may result in biased response to incoming information.

In the present context, unless a person comes to the COVID-19 crisis with a major depressive disorder diagnosis (MDD), the responses to the feeling down question are a function of being subjected to elevated environmental stress, requirements to adapt to new environmental conditions such as safe distancing, stay-at-home, remote work, quarantining among other things. This means that glucocorticoid secretions are abnormally high during these weeks for a large segment of the population, and the ability to respond to stressful environment for a prolonged period affects people differently. While the simple question asked in PUFs won't allow us to clinically diagnose or document regions of the brain implicated, nor will it allow us to really get to the heart of what processes are being taxed: goal orientation as a consequence of COVID-19, attention and prioritization in wake of COVID-19, recovery from adverse COVID-19 incoming information, response or anticipation of contingencies based on COVID-19 incoming information. It will allow us to use these clinical insights to suggest that prolonged exposure to an uncertain stressor like COVID-19 could potentially impair: goal orientation, prioritization of tasks, response to stimuli in ways that keeps a person engaged and ready to do productive work, and engagement in healthy consumption of goods and services. All of which are fuel to an economic recovery. I feel taking the time to explain the processes affected by depression aids understanding of how it may feed into labor productivity and consumer behavior. Feeling down and depressed over weeks of COVID-19 can lead to clinical diagnosis of depression for many affected by the pandemic. The proper interpretation of this variable would be a red alert to a potential rise in a mental health crisis in Wisconsin (the U.S., and the world), post pandemic and its potential influence in slowing down economic recovery.

The descriptive analysis in Table A1 shows a summary of all four mental health variables, the Cronbach alpha if an item is excluded, and their correlations. First the dimension anxious has a mean of 2.12 which means the central tendency of the survey respondents, using by population weights, are anxious several days of the week irrespective of wealth status, job status, food security, or housing security. In fact, the anxiety level can be interpreted as trait anxiety levels, due to COVID-19, are high for everyone in the U.S. It is highly likely even for the respondents with a formal diagnosis of anxiety disorder COVID-19 would elevate anxiety levels. Second, the correlation matrix shows all four mental health measures are highly correlated to each other. This makes sense because

they are individual questions part of a larger scale. The Cronbach alpha for these four measures is 0.91 which means these four items hang well together and can be condensed into one measure. We call this measure mental distress.

Table A1. Descriptive Statistics of Mental Health Variables

Dimension	N	Alpha	IIC	Mean	SD	Correlation Matrix			
						1	2	3	4
1. Anxious	991,412	0.88	0.72	2.12	1.07	1			
2. Worry	990,862	0.87	0.69	1.95	1.04	0.82***	1		
3. Interest	990,339	0.89	0.73	1.89	0.99	0.66***	0.69***	1	
4. Down	991,186	0.87	0.69	1.85	0.99	0.72***	0.75***	0.78***	1
Scale test		$\alpha = 0.91$	0.71						

Source: Own calculation using Household Pulse Survey
IIC-Inter-item correlation

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