UNDERSTANDING THE CORONAVIRUS DISEASE 2019 (COVID-19) AND ITS EFFECTS ON THE ECONOMY[1]

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SUMMARY: The purpose of this article is to discuss how the coronavirus SARS-CoV-19 disease (COVID-19) has precipitously affected the United States and global economies. The information and data in this article will vary based on the rapid change of daily statistics. This article will provide information, which will allow readers to understand the differences between viruses such as SARS-CoV-19, Influenza (Flu), and the Swine Flu (H1N1). Furthermore, this article will provide information about the pandemic effects on the economy, economic scarring, key recession indicators, and the long-term impact of a recession. A descriptive and correlational search query for the U.S., U.K., and Asia was collected from the World Health Organization, the Center for Disease Control and Prevention, and numerous organizations and analytical research papers. Moreover, this article's information and data are subject to change. Researchers are acquiring knowledge about the progressing disease, economic impact, and solutions daily.

Keywords: COVID-19, Influenza, Swine Flu, Center for Disease Control and Prevention, World Health Organization, Economy, Global Business, Recession, Unemployment Rate.

CORONAVIRUS DISEASE 2019

On January 20, 2020, the Center for Disease Control and Prevention (CDC) activated the Emergency Operations Center (EOC) to support health partners responding to the outbreak (CDC, 2021). On February 11, 2020, the World Health Organization (WHO) announced an official name for the novel Coronavirus Disease 2019 (COVID-19), which caused the outbreak. COVID-19 is an airborne infectious disease that spreads through saliva or nasal discharge when an infected person coughs or sneezes (WHO, 2021). The first outbreak was in Wuhan, Hubei Province, China, with other epidemics in other countries such as Europe, Africa, and the United States (U.S.). Before 2019, this disease had not been previously found in humans. Coronaviruses are transmitted between animals and people. However, due to elongated research, it has been determined that the origin of this beta-coronavirus includes camel, cattle, cats, and bats (CDC, 2021).

COVID-19 affects different people in different ways. According to the CDC (2021), within 2-14 days of exposure, carriers will have symptoms such as fever, cough, shortness of breath, fatigue, muscle aches, loss of taste or smell, nausea or vomiting, and diarrhea. It is suggested to seek medical care if trouble with breathing, persistent pain or pressure in the chest, or the inability to stay awake arises. The data for demographic trends, cases, and deaths of COVID-19 are

changing daily. According to the CDC (2021), there have been 26,852,809 total cases and 462,037 total deaths in the United States. As of February 8, 2021, the World Health Organization reports there are 105,805,951 confirmed cases and 2,312,278 total deaths globally. These numbers have far surpassed the number of reported hospitalizations and deaths during the 2019-2020 flu season. Considering the recent release of the COVID-19 vaccine, medical experts expect the vaccination will teach the immune system how to recognize and fight this particular virus strain, which might significantly decrease the number of cases related to this strain in the future.

INFLUENZA AND THE SWINE FLU

Influenza, commonly known as the flu, is a contagious respiratory illness that infects the nose, throat, and lungs (CDC, 2021). COVID-19 and the flu,unlike the common cold, can lead to death. According to Tokar, Olsen, and Reed (2018), approximately 5%-20% of people develop influenza each season. The CDC (2021) estimates that during the 2019-2020 flu season, there were 39 to 56 million cases, 18 million medical visits, 410,000 – 740,000 hospitalizations, and 24,000 -62,000 deaths throughout the United States. The 2020-2021 preliminary data show a decreased number of cases from 2019-2020 due to the increase in coronavirus cases. The flu is easily detected, and fortunately, individuals can receive an influenza vaccination before the flu season begins. Dissimilar to COVID-19, the general population has preexisting immunity to the flu, and COVID-19 has a higher mortality rate than the flu in all age groups, except children under 12 (Pekosz, 2020). The COVID-19 vaccine does not help protect against the flu virus, nor is there immunity to the COVID-19 virus.

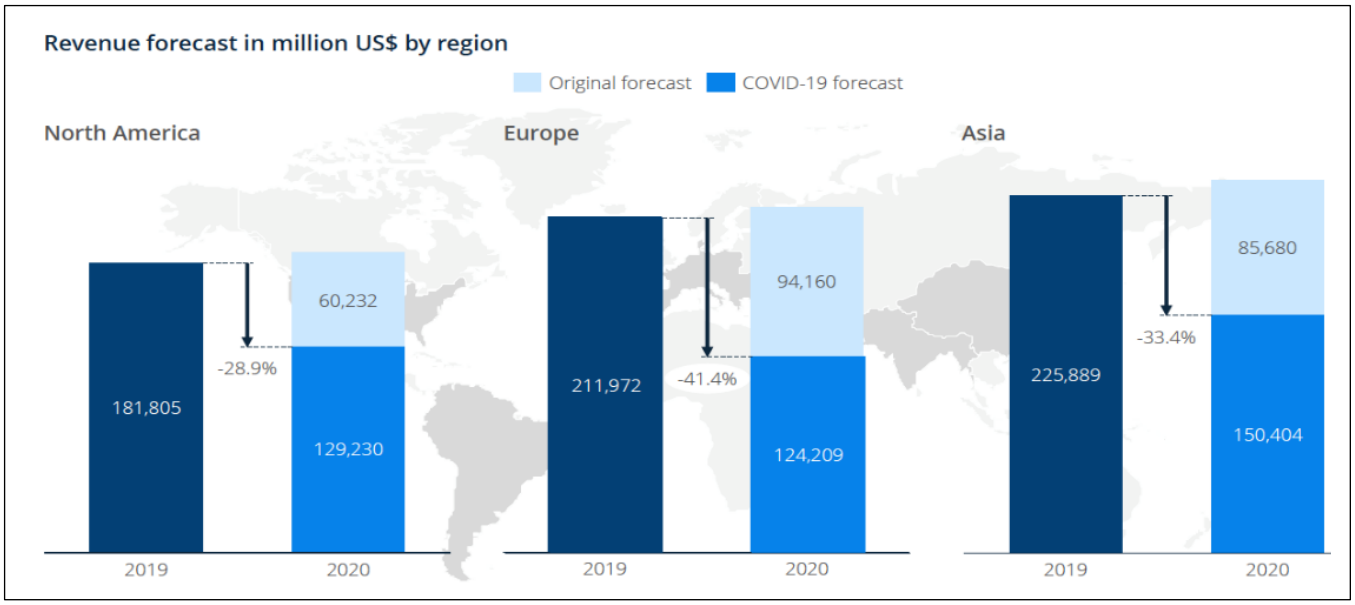
In 2009, a novel virus known as the Swine Flu (H1N1) emerged and was designated a pandemic by the World Health Organization. Compared to COVID-19 and the flu, H1N1 symptoms consist of cough, sore throat, runny or stuffy nose, body ached, and fever. In 2019, the CDC estimated at least 60.8 million cases, 402,000 hospitalizations, and 18,300 deaths in the United States resulting from H1N1. In 2010, Dr. Margaret Chan announced H1N1 was no longer a pandemic and or adominant virus with massive outbreaks (WHO, 2020). Henceforth, research and evidence have allowed countries to detect, report, and vaccinate infected individuals rapidly. Fortunately, the flu vaccine can help protect against the H1N1 influenza virus strain, unlike the COVID-19 vaccine.

EFFECTS ON THE ECONOMY

COVID-19 has created a spiraling downward effect on the healthcare industry, travel industry, and retail industry. COVID-19 might be the black swan that forces companies to change or implement their supply chain model. A black swan is merely an unpredictable event that is beyond what is ordinarily anticipated. The global healthcare industry is worth over 9 trillion in revenue (Policy Advice, 2021). In contrast, the international business industry generates trillions of U.S. dollars in annual revenues. According to Statista (2021), global income in travel and tourism due to COVID-19 has decreased from $685.1 billion in 2019 to $447.4 billion in 2020. As of January 2021, the business travel sector alone has lost $710 billion in revenue due to COVID-19 (Hancock & Georgiadis, 2021). This number does not include the retail, transportation, hospitality, investment, finance, or technology industries. The effects on the economy are

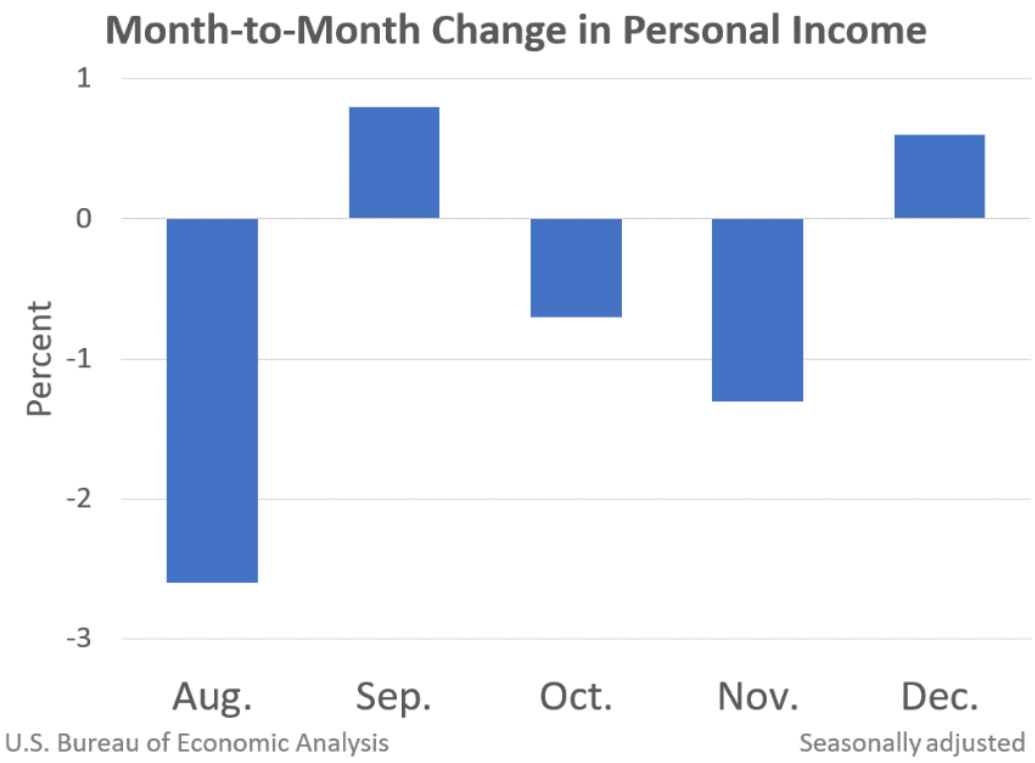
unprecedented at this point. The COVID-19 pandemic has created a crisis, demand increase, supply decrease, and financial disturbance simultaneously. Figure 1 depicts the global revenue in millions of U.S. dollars by country in the travel and tourism industry.

Figure 1: Global revenue in million U.S. dollars by country in the travel and tourism industry (Statista, 2021)



Although the global travel and tourism industry is showing a loss in revenue, estimates released by the Bureau of Economic Analysis (BEA) show that personal income (PI) in the United States increased by $116.6 billion (0.6%) in December 2020. Disposable personal income (DPI) increased $111.6 billion (0.6%), and personal consumption expenditures (PCE) decreased $27.9 billion (0.2%) (BEA, 2021). These numbers reflect the impact of COVID-19. However, the BEA (2021) states the full economic impact of COVID-19 cannot be quantified in personal income and outlays statistics because of an increase in COVID-19 aid relief. Furthermore, the decrease in PCE reflected a decrease of $71.9 billion in spending for goods and a $17.6 billion decrease in spending for services. It may appear that increased PI would promote an increase in spending and services; however, fear of the unknown and the increase of unemployment attributed to the decrease in consumer spending. According to the BEA, figure 2 illustrates a month-to-month change in personal income from August 2020 to December 2020.

Figure 2: Month-to-month change in personal income from August 2020 to December 2020 (BEA,2021)

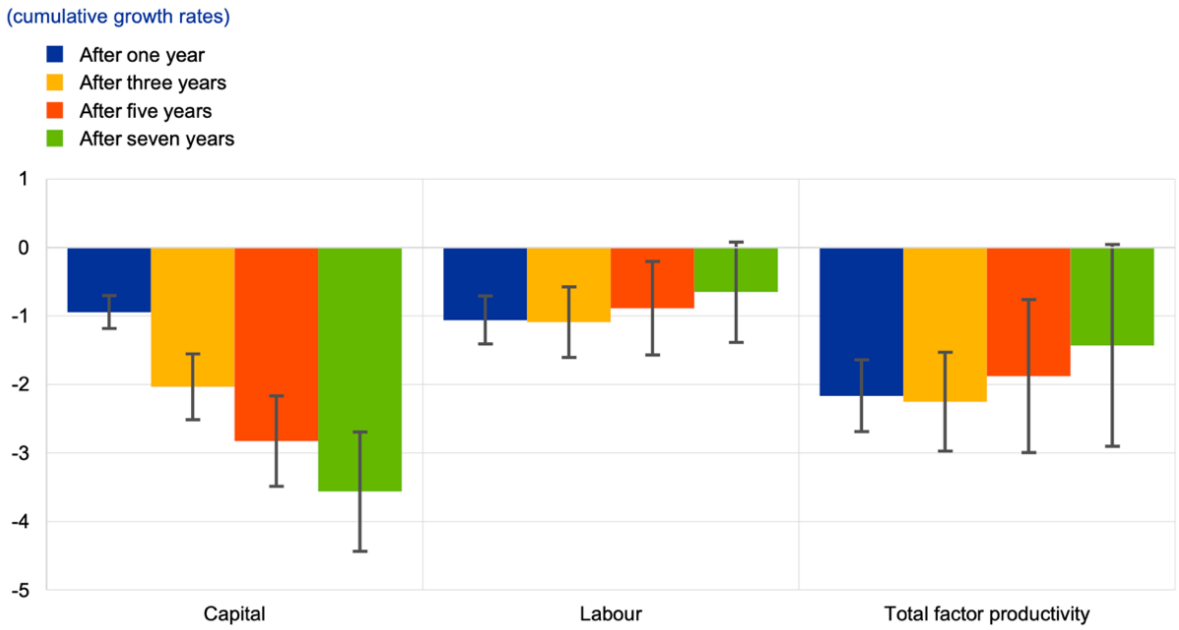


ECONOMIC SCARRING

It is a known fact that history repeats itself. The macroeconomic consequences of pandemics worldwide throughout history have created large scale economic shock (Jorda, Singh, & Taylor, 2020). For example, the Black Death was a bubonic plague in Afro-Eurasia from 1346-1353 AD (Benedictow, 2005). This was by far the most fatal pandemic in history, resulteding in over 75 million deaths. Similarly, the Spanish Flu, also known as the 1918 influenza pandemic, lasted from 1918-1920 and consequently infected roughly 500 million people globally (CDC, 2021). The death toll is estimated to be between 20 million and 50 million people, which adds to one of the most-deadly pandemics in history. COVID-19 has an estimated worldwide death toll of 2.4 million, which increases daily (CDC, 2021).

Research suggests that the long-term global economic scarring resulting from COVID-19 will last an estimated two years. Jordà et al. (2020) find substantial long-lasting macroeconomic consequences from 15 major pandemics since the 14th century, which average 2-3 years of persistent scarring. According to Fuentes and Moder (2021), it is too early to determine the negative effect of COVID-19 on the economy. Figure 3 illustrates the impact of the financial crisis on supply-side components of potential output.

Figure 3: Illustrates the impact of financial crisis on supply-side components of potential output (Fuentes & Moder, 2021)



KEY RECESSION INDICATORS AND THE LONG-TERM IMPACT

Research showsnumerous elements to determine the status of the economy, and U.S.'s potential of falling into a recession. For example, historic crashes such as the Great Depression in 1929, which caused the Dow Jones to tank 89%; Black Monday in 1987, which was the worst stock market crash in history; the Dotcom Bubble crash in 2000, which decreased the stock market's value by at least 10%; and the 2008 Housing Market Financial Crisis that left many homeowners homeless are examples of what could happen once the pandemic curve has flattened.

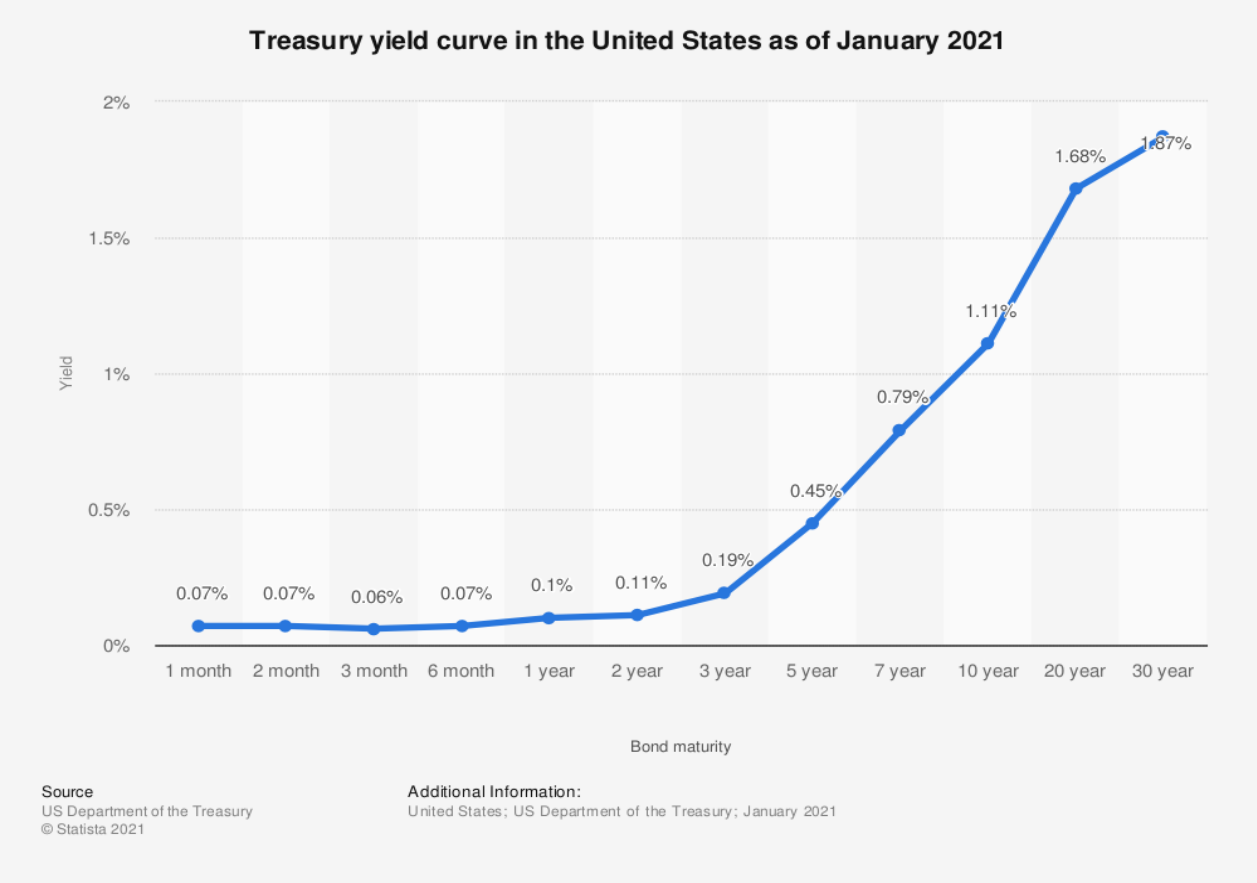
To further illustrate key recession indicators, one might consider monitoring the following:

- The Yield Curve.
- The Consumer Confidence Index (CCI).
- Employment Data.
- The Leading Economic Index (LEI).
- The Gross Domestic Product (GDP.

The yield curve plots interest rates of bonds having equal credit quality. Simultaneously, the slope provides an idea of future interest rate changes and economic activity (Investopedia, 2021). The three main types of yield curve slope are upward, downward, and flat. The indication of a recession would show the yield curve transitioning into a downward slope. Typically, recession risks are low because of steady household spending, which is the economy's backbone (Golle, 2019). With the pandemic sustaining momentum, there has been a decrease in leisure expenditures (disposable income), with a steady flow of essential purchases. The price and demand of essential items have increased, while supply has decreased. This type of adjustment to spending

typically would shift the demand curve downward and increase the rising risk of a recession. In light of a decrease in supply, the yield curve has increased due to the decline in interest rates throughout 2019. Figure 4 illustrates the United States Treasury yield curve as of January 2021.

Figure 4: Illustrates the United States treasury yield curve as of January 2021 (Statista, 2021)



Next, the consumer confidence index suggests households' consumption and saving behaviors (OECD, 2021). At the end of 2020, the CCI signaled a downward slope. However, the data as of January 2021 signals an increase in consumers' confidence, reflecting an upward slope. To clarify, even as COVID-19 cases surge, consumers have increased confidence with the current state of the nation and the economy. According to the Consumer Confidence Survey (2021), the index as of February, 2021 stands at 89.3 (1985=100), up from 87.1 in December 2020. The survey shows their pessimistic attitudes about economic developments have decreased, resulting in spending more and saving less.

Equally important, employment data shows changes to the national unemployment rate and the labor market. The Bureau of Labor and Statistics (BLS) releases detailed data weekly. As of January 2021, the unemployment rate had decreased by 0.4%, which changes the labor market to reflect a 6.3% unemployment rate due to COVID-19 (BLS, 2021). An economic recession results in a spike in unemployment. When compared to historical data, the higher the unemployment rate, the longer it takes to recover. The Business Cycle Dating Committee of the National Bureau of

Economic Research determined that the U.S. economy reached a peak in February 2020, marking the beginning of an economic downturn (Yoe, 2020). The unemployment rate increased from a 2019 annual average of 3.7% to 14.7% in April 2020 (BLS, 2020). Today, the unemployment rate shows a significant decline from 14.7% to 6.3%, it appears the nation is slowly recovering. Reviewing past recessions and recoveries may help us to understand the possibility of propelling into a recession.

The fourth key recession indicator is the leading economic index (LEI). The LEI is a short-term measurable variable of interest that predicts change in a process or trend in the economy (Investopedia, 2021). According to the Conference Board (2021), the LEI for the U.S. increased 0.3% in December 2020 to 109.5 (2016 = 100), following a 0.7% increase in November 2020 and an 0.9% increase in October 2020. The LEI increased for six consecutive months, which shows an incline in economic trend amid COVID-19. Indicators vary with market accuracy and trends. The LEI is a visual tool that shows economic momentum, improvement, and sustainability. It reflects a slow rise in U.S. economic growth. Still, it is not the sole indicator of the nation's current financial status during a pandemic.

Last, the gross domestic product (GDP) indicates the total value of goods and services generated by an economy. The 2019 U.S. GDP was $21.43 trillion. The 2020 U.S. GDP is projected to be $20.8 trillion (IMF, 2021). These numbers reflect a deficit in U.S. GDP growth; however, it is considered satisfactory amid the pandemic. The question at hand is, are we leaning into a recession? Researchers and analysts advise there is no need to panic. Additionally, the current data indicates it is too early to determine the U.S.'s likelihood of plummeting into a recession in 2021.

CONCLUSION

In closing, a descriptive and correlational search query for the U.S., U.K., and Asia was collected from the World Health Organization, the Center for Disease Control and Prevention, and numerous organizations and analytical research papers. The data postulated reflects a slow increase in economic growth. In contrast, the data also indicates that a recession is possible as long as the pandemic is present. The impact on the economy is that Americans and other countries will continue to see disruption. This disruption and others in the past were not warranted; however, we cannot control epidemics, pandemics, or any crisis.

Moreover, in a society where remote working, remote learning, and social distancing is considered the "norm," COVID-19 has taught us that we were not as prepared for a pandemic or recession as we presumed. Uncertainty increases irrational decisions and risks. Reconsidering structure, strategies, supply chain models, and finances are significant in maintaining economic stability. Economic stability is sustained when excessive fluctuations are decreased and with constant output growth. Although the data in this article reflects a steady output growth, it does not confirm nor deny that a recession is foreseeable since the inception of the COVID-19 pandemic.

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RISING FOOD INSECURITY DURING THE COVID-19 PANDEMIC: THE IMPACT OF INSTITUTIONAL RACISM

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SUMMARY: The COVID-19 pandemic has brought a dangerous surge in food insecurity. The increase has been across races and ethnicities and has affected both high-income and low-income families. Food insecurity is not just about being hungry; it constitutes a health crisis. This study uses data from the Household Pulse Survey of the U.S. Census to estimate food insecurity by race, ethnicity, income level and education. The data cover the period April 23 until December 22, 2020. We find that the most important food assistance program in the United States is the Supplemental Nutrition Assistance Program (SNAP). An expansion and reform of SNAP could be key to ending food insecurity, reducing poverty, and strengthening grocery and other retail stores in low-income neighborhoods.

Keywords: Food Insecurity, COVID-19, Food Stamp Program, Food Desert, Systemic Racism

JEL Codes: D12, I14, I18, I38

Rising food insecurity is a pandemic inside a pandemic. In December 2019, food insecurity affected 10.5% of the U.S. population, or 35.2 million people across 13.7 million households. By summer 2020 the food insecurity rate we estimated was 27.5% using Census data from the Household Pulse Survey. It is not just low-income families that are food insecure – there are many middle-class families that are food insecure during the pandemic. Food insecurity rates vary across the country and by level of urbanization and by race, age, income, and education. Food insecurity is everywhere and affects all races. White non-Hispanics were 49.5% of those who were food insecure (Coleman-Jensen, et al, 2020). Other studies have documented an initial increase in food insecurity during the pandemic, but we found a sharp initial rise followed by continuing high levels through the end of 2020. With high levels of food insecurity in December 2020 and a surge in COVID-19 cases we fear conditions could worsen during the winter and remain high in 2021. We have analyzed data from the U.S. Census Household Pulse Survey (HPS) covering the period from April 23 to Dec 22 of 2020 and have used data from the United States Department of Agriculture (USDA) for 1998 to 2019 for comparison. The HPS

2020 data was collected in 21 separate surveys in three Phases (US Census Household Pulse Survey, 2020). This paper extends the data and the analysis reported in an earlier brief (Larson, Ong, Mar, and Peoples, 2020) and adds new analysis. In this study, we examine Census data on food insecurity gathered in 2020 and consider the role of systemic racism in explaining gaps in the well-being of non-Whites compared to Whites. This paper concludes with recommendations on long-term solutions.

The 2.2 trillion-dollar CARES Act provided 24.7 billion dollars directly for food assistance ($8.9 billion for child nutrition programs and an additional $15.8 billion for SNAP), but the Act mostly helped individuals with additional unemployment benefits, job protections, and housing protections (Snell, 2020). Many families received economic help, but that did not prevent rising crisis levels of hunger and food insecurity. Non-profit food banks were challenged by the great increase in food insecurity. But the main programs helping fight food insecurity have been four federal programs run by the US Department of Agriculture: SNAP (formerly known as Food Stamps), WIC, School Lunches and School Breakfasts.

FOOD INSECURITY BACKGROUND

The rise in food insecurity threatens to increase severe diet-related diseases such as obesity, diabetes, and heart disease—diseases that are among the leading causes of death in the United States. Children in families with food insecurity may suffer from birth defects, anemia, cognitive problems, asthma, and poor general health. These problems can lead to poor performance in school and can be coupled with behavioral problems and high dropout rates.

Food insecurity is a major problem even when the nation has low unemployment. In December 2019, with the lowest unemployment rate since 2000, there were still 32.5 million people suffering from food insecurity - 10.5 percent of the population (USDA, 2020). Food insecurity last increased during the Great Recession of 2007–9 and now the nation is facing an increase in food insecurity much greater than that experienced during the Great Recession due to the COVID-19 pandemic, as will be shown below.

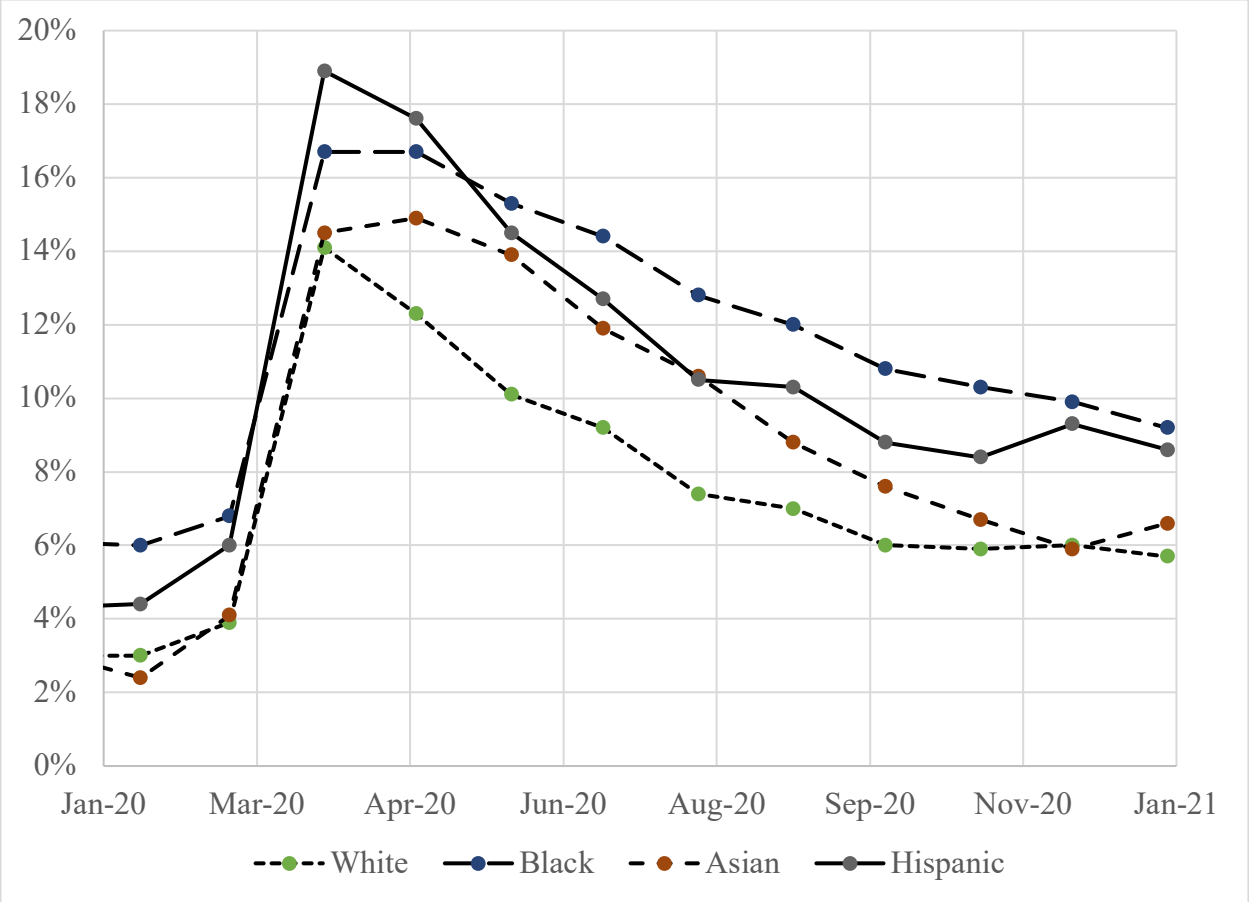
The COVID-19 pandemic and ongoing societal disruption has led to one of the most severe economic downturns ever in the US economy. According to the U.S. Bureau of Economic Activity, GDP declined at an annualized rate of 31.7% during the 2nd quarter of 2020 (U.S. BEA, 2020), prompting the New York Times to term it as the "worst drop on record" (Casselman**,** July 30, 2020). The official BLS unemployment rate was 14.8% in April, and then fell to 10.2% in July (U.S. BLS, July 2020) as the economy opened partially. The December 2020 unemployment rate was down to 6.7%, (U.S. BLS, January 2021). but part of that reduction reflected adults dropping out of the labor force as they gave up looking for work. The net change in jobs from November to December 2020 was a loss of 140,000. The unemployment rate again failed to reflect those who wanted work but had given up looking for work. Being officially unemployed means being without a job and actively looking for work. The above unemployment rates have likely under reported the labor-market impact because they do not include discouraged workers who stopped looking for work. A study by Robert Fairlie, Kenneth Couch, and Huanan Xu (2020) adjusts for concerns over the BLS classification issues of unemployment and finds an upper-bound estimate of the April 2020 unemployment rate to be much greater at 26.5 percent. This level of unemployment rivals the unemployment level of the worst year of the Great Depression of the

1930s. They also estimate 2020 upper-bound unemployment rates of 31.8 percent for blacks and 31.4 percent for Latinx.

Figure 1 provides the official BLS unemployment rates by race and ethnicity and show the sharp rise in unemployment for all groups in April. The unemployment rates for Blacks and Latinos are always higher than the rates for Whites but unemployment rates exploded for Whites as well as for non-Whites in April 2020.By the middle of December over 200,000 new COVID-19 cases were reported each day and there were 3,000 to 4,000 deaths per day. By comparison, daily Covid deaths were greater than the impact of 9-11, Pearl Harbor, and disasters of similar magnitude, every day. By the end of 2020, COVID-19 deaths exceeded America combat deaths during WWII. COVID-19 had become the deadliest disease in the U.S.

Unemployment Rates by

Figure 1: Race and Ethnicity, January 2020 to January 2021



Source: U.S. Bureau of Labor Statistics, Employment Situation Reports.

Food insecurity was a major problem before the COVID-19 pandemic. Food insecurity does not mean people are simply hungry. It is also defined as occurring where there is only access to a poor diet and is associated with serious health problems. Food insecurity is defined by the United States Department of Agriculture as consisting of either low food security: "reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake." Or

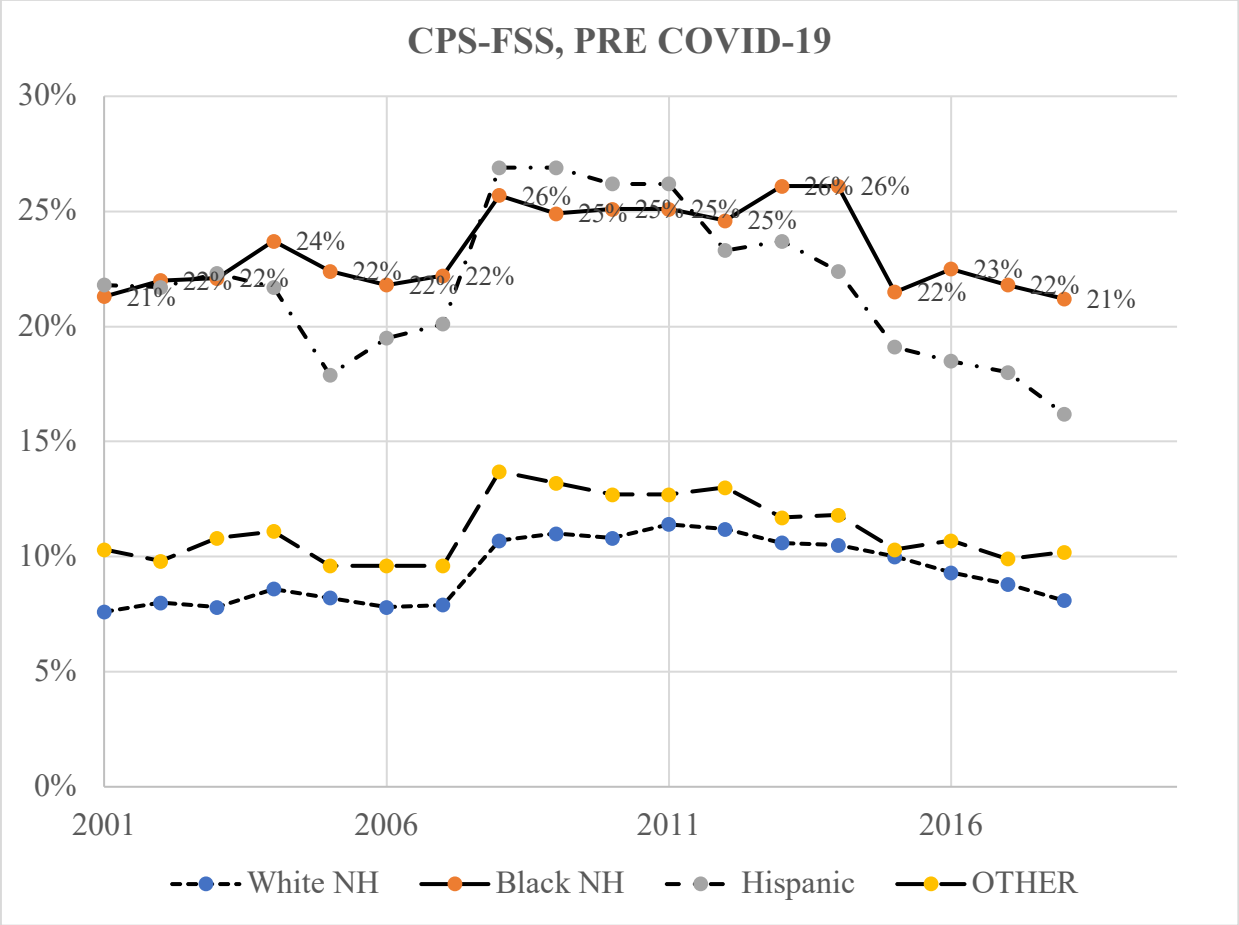
very low food security: “Reports of multiple indications of disrupted eating patterns and reduced food intake” (Coleman-Jensen, et al, 2020). As is usual in studies of food insecurity, our study combines instances of “very low” and “low” food insecurity in our estimates of overall food insecurity.

[i] The number of households who are food insecure follows the business cycle closely with rises and falls tightly linked with changes in unemployment rates. Unemployment rates during the pandemic quickly exceeded those of the Great Recession and may have been as high, briefly, as during the Great Depression of the 1930s. As unemployment rates rose during the Great Recession, the percentage of U.S. households experiencing food insecurity rose from 10.9% in 2006 to 14.7% in 2009. This gave us 50.2 million people experiencing food insecurity in the recession year of 2009 compared to 32.5 million in the very low unemployment year of 2019 (Coleman-Jensen, et al, 2020). The data in Figure 2 is from the Current Population Survey Food Security Supplements (CPS-FSS) done in December of each year since 1998 (Coleman-Jensen, et al, 2020).

Feeding America, an organization that coordinates food banks across the country, predicted that the number of people facing food insecurity during the pandemic would rise past 53.4 million persons, including 18 million children (Feeding America, 2020). This estimate now seems conservative, as we will show below.

In Figure 2 we see food insecurity by race and ethnicity. Even in good years for the economy, Black and Hispanic households have high rates of food insecurity. In 2019 the rate for Black households was 23% and the rate for Latinx households was 21%. The Great Recession shot Latinx levels of food insecurity above levels for Black non-Hispanics, with rates going to 27% and 25% respectively. The long economic expansion from 2009 through 2019 then brought Latinx insecurity rates to new lows. Black households saw a return to pre-pandemic levels of more than 20 percent—levels much higher than for other races or ethnic groups surveyed. The “Other” category in the CPS-FSS data represents mostly Asians and has rates close to those for White non-Hispanics. Whites and Asians were also subject to increased levels of food insecurity during the Great Recession, but their levels were far below those of Blacks and Hispanics.

Figure 2: Food Insecure Households by Race



Source: Coleman-Jensen, Rabbitt, Gregory, and Singh, using Current Population Survey data from CPS-FSS.

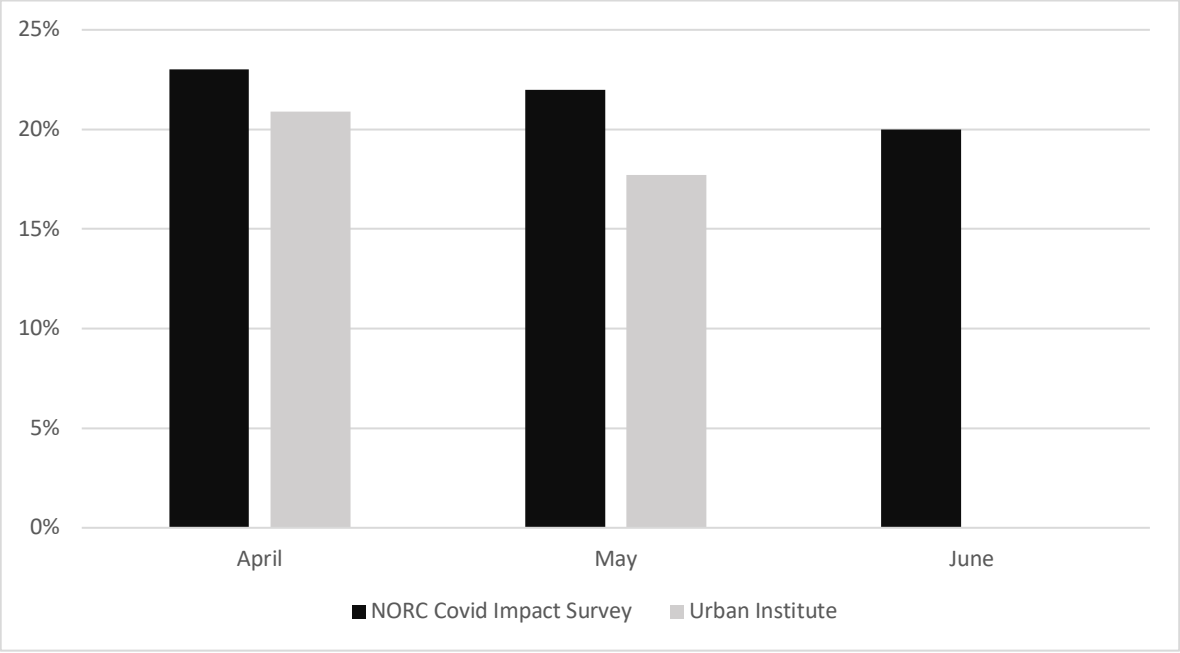
The racial gaps in food insecurity mirror racial gaps throughout the economy by race. Concurrent gaps in economic well-being in numerous measures, such as unemployment, wages, and wealth, suggest systemic racism is maintaining and creating inequality with Blacks and Hispanics as the primary victims. But, while White rates of food insecurity are much lower than those for Blacks and Latinx, Whites are about 50% of all food insecure households. Systemic racism does not just affect minorities. Food policies that are aimed at Blacks and Hispanics also hit Whites.

Studies of COVID-19 Impact on Food Insecurity

The COVID Impact Survey by the National Opinion Research Center (NORC) at the University of Chicago, did interviews over three months of the pandemic, from April to June. The results show a more than doubling of food insecurity in April 2020 compared to December 2019 (the last previous survey result from CPS-FSS) (COVID Impact Survey, 2020). Although the census and NORC surveys are not directly comparable, the measured rate in December by the census in 2019 was 10.5 percent and the NORC finding in April was much higher at a rate of 23

percent in April. Although the NORC study found some decline in food insecurity after April, the level remained very high in June at 20 percent (see Figure 3). A study by the Urban Institute found that food insecurity among nonelderly adults aged 18 to 64 in the United States reached 21.9 percent in late March and early April and declined to 17% between May 14th and the 27th. It was found that 31 percent of all households reduced their spending on food (Karpman, Zuckerman, Gonzalez, and Kenny, 2020). These findings for March and April occurred before most of the benefits of the CARES Act had been distributed. The decline in May was attributed to a combination of some people going back to work and to more people realizing benefits from CARES and the Paycheck Protection Program (PPP). The main government food program, SNAP, was criticized as falling far short of need given the severity of the food crisis.

Figure 3: Food Insecurity for Households, NORC and Urban Studies, by Percentage



In 2009 there were 50.2 million people living in food insecure households accounting for 16.6 percent of American households. Early 2020 estimates of food insecurity from NORC and the Urban Institute show some rates over 20%. Millions more were facing food insecurity as the pandemic continued. Below, we extend the data using the Household PULSE Survey which covers the period April 23 to Dec 22, 2020 (U.S. Census Household Pulse Survey).

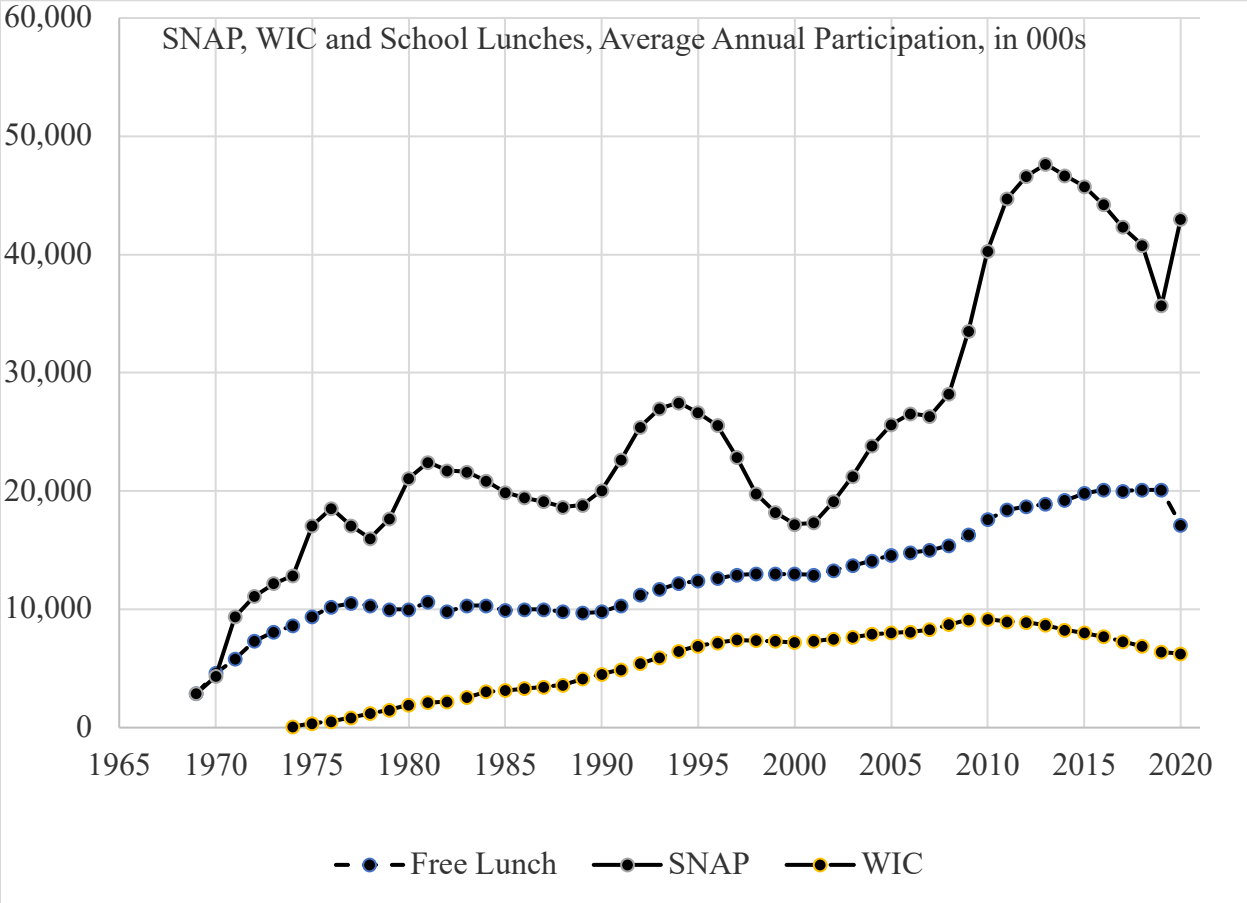
Federal Programs for the Food Insecure: SNAP, WIC, and School Meals

The major program, government or private, to help those who are food insecure is the Supplemental Nutrition Assistance Program (SNAP, otherwise known as Food Stamps). SNAP is one of four major food assistance programs run by the United States Department of Agriculture through the Food and Nutrition Service (FNS). Funding is provided through the federal Farm Bill, which is reauthorized about every five years. The other three programs are Special Supplemental

Nutrition Program for Women, Infants, and Children (WIC), School Lunches and School Breakfasts. Figure 4 below shows annual average participation in SNAP, WIC, and School Lunches. During 2009, the last year of the Great Recession, SNAP participation was, on average per month, 15.2 million households with 33.4 million participants at a cost of $4.3 billion a month. Figure 4 omits the School Breakfast program since it often double counts participation in the lunch program. The three programs shown are not added together since many school lunch participants are also counted in the SNAP program.

In April of 2019 there were 18.4 million households receiving SNAP benefits with a total population of 34.7 million participants and total benefits paid of $4.5 billion. 2019 was a year with a very good economy, but it already had more people receiving SNAP benefits than the recession year of 2009 (USDA, 2021). By April 2020, shortly after the pandemic resulted in widespread shutdowns, the number of households on SNAP rose to 22.2 million and the population participating was 43 million with monthly benefits of $7.8 billion paid. This was an 18% increase in households, a 15% increase in the number of participants and a 73% increase in benefits paid compared to April 2019. The pandemic had just begun. The beginning of 2020 suggested a big surge to come in eligibility for these nutrition programs.

Figure 4: Participation in Three Federal Nutrition Assistance Programs



Source: U.S. Department of Agriculture, 2021

Despite criticisms of low budgets, non-nutritional purchases, and difficulty in enrolling eligible families and individuals SNAP has been found to be effective in reducing food insecurity and has been credited with reducing food insecurity by 20%. Gundersen, Kreider, and Pepper have estimated the average gap in food purchases that separates food insecure households from the food secure is $42 per week for the average household and $46 per week for households with children. They estimate that an extra $42 in benefits per week for SNAP families would reduce food insecurity by 62% (Gundersen, Kreider and Pepper, 2018).

Food insecurity is high for those on SNAP due to the small food budgets allowed and because unhealthy foods are often being purchased through SNAP (Gundersen et al, 2018). Following the recommendations of Gundersen, et al. there would be a large increase in SNAP expenditures with more generous benefits, but the extra costs would be offset by health care savings. Data consistently shows that there are greater health problems for those who are food insecure than with those who are food secure (Dean, French and Mortensen, 2020). Cook and Poblacion (2016) estimate that the health care costs of food insecurity in 2014 were $160 billion. Shepard, Setren and Cooper (2011) estimate that food insecurity led to extra health care costs of $130.5 billion in 2010. Using a different methodology, Berkowitz, Basu, Meigs and Seligman (2018) found that the additional health care expenditures linked to food insecurity in the U.S. were as much as $74.2 billion in 2013. These estimates are all a narrow way to estimate the benefits of increased SNAP benefits All three estimates ignore the personal costs of dealing with poor health and the long-term issues that can harm children. They also ignore the value of time lost at work because of illness or reduced productivity and also exclude the value of missed opportunities for education and upward mobility due to health problems. In comparison, the estimated health care cost of excessive alcohol use in 2010 was $27 billion (National Institute on Drug Abuse, 2020). In 2013, using the Berkowitz, et al. estimates of health care costs and the real numbers on food expenditures, there would have been a net cash savings of the saved health costs minus the higher SNAP payments of $13.1 billion. Spending more to combat food insecurity would save significantly on health care costs and promote the overall well-being of many millions of people. Food insecurity is itself a leading indicator of economic well-being (Gundersen, Kreider and Pepper, 2020).

US CENSUS HOUSEHOLD PULSE SURVEY DATA AND FOOD INSECURITY

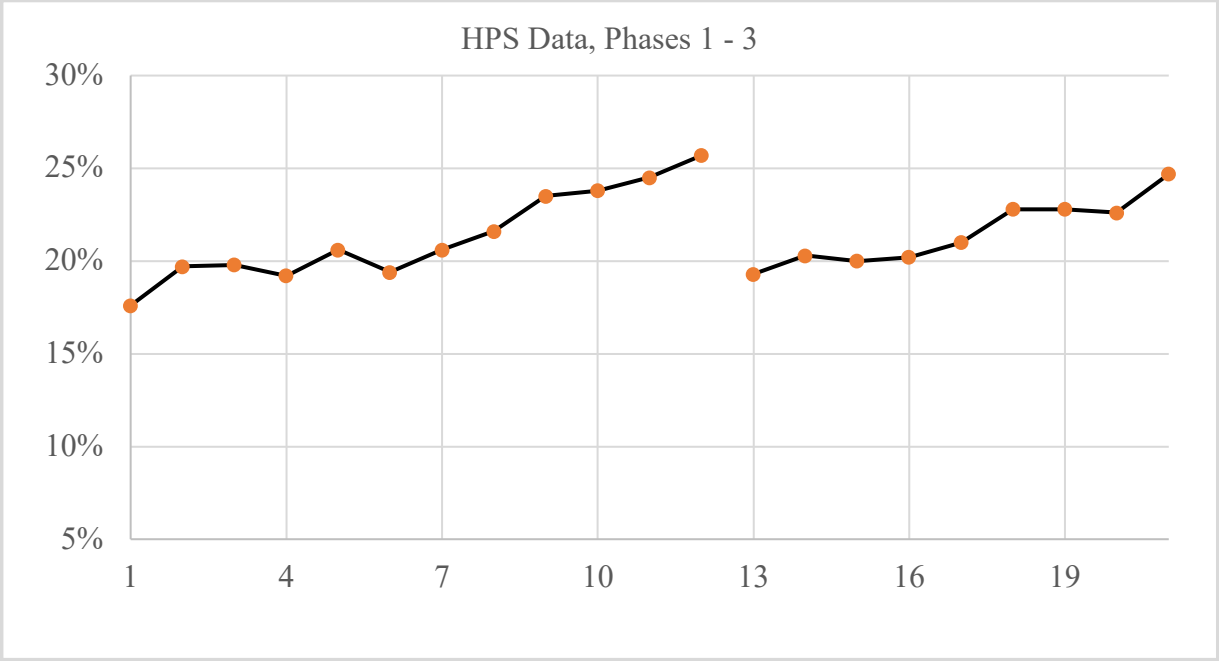
The analysis below of the pandemic's impact on food insecurity relies on the U.S. Census Bureau's Household Pulse Survey (HPS), a multi-agency collaboration to collect information on the social and economic effects of COVID-19 on Americans. The HPS covers the period from April 23 to Dec 22 in 21 separate surveys. It is conventional to refer to each survey as representing a week in even progression, but the surveys are not always for just one week and the weeks are not always consecutive – there is a major break between weeks 12 and 13 of about three weeks. The last CPS-FSS was in December 2019 and is only done once a year. There, data is presented for both individuals and households. The food security questions are more detailed in the CPS-FSS, but there are similar questions in the HPS that permit comparison between the two surveys. There is detailed information only for those 18 and older. Households are identified as having or not having children but there is no individual data on children. The HPS survey has much larger samples than the Urban Institute and NORC studies cited above, with several million interviews

conducted overall, and provides more detail than other pandemic surveys. The Census Bureau has decided to continue the surveys into 2021.

There are three phases of the HPS. The first phase of the Pulse survey, weeks 1 through 12, reports that from 17.5% to 25.7% of the population had trouble getting enough healthy food. This shows a more than doubling of the level of food insecurity from December 2019. Instead of the estimated 54 million people with food insecurity (above), there were about 64 million by week 12 (July 16-22). Phase II of the HPS began four calendar weeks after Phase I ended. Phase II is from "week" 13 through 17 (August 19 to 31 until October 14 to 26). This period shows there was a significant drop in food insecurity between week 12 and 13, but then another rise. The lowest level in Phase II, 19.3%, is still much higher than the highest level from the Great Recession (which was 14.9%). In Phase III, weeks 18 to21 (from October 28 to December 21), there is continued high food insecurity with a sharp rise in week 21 (December 9 through 21). The December rise coincides with the third surge in COVID-19 cases and with more business shut-downs. December was the first month since April to see a net loss of jobs.

In Figure 5 we see greater levels of food insecurity than during the Great Recession every week after April 23 (the end of the first week of the HPS surveys).

Figure 5: Household Food Insecurity from April 23 until December 22.



Source: Authors' calculations from HPS data

We found that the most important reason for food insecurity in 2020 was financial hardship – which was increased by the pandemic. There are two other reasons food choices were limited during the pandemic. First, the shelter-in-place mandates affected households, with and without financial hardships, in terms of access to food sellers. Second, many people were afraid to leave home to shop.

We calculated the rate of food insecurity using several HPS survey questions to create one food insecurity measure. In the HPS there are five possible responses to the following question:

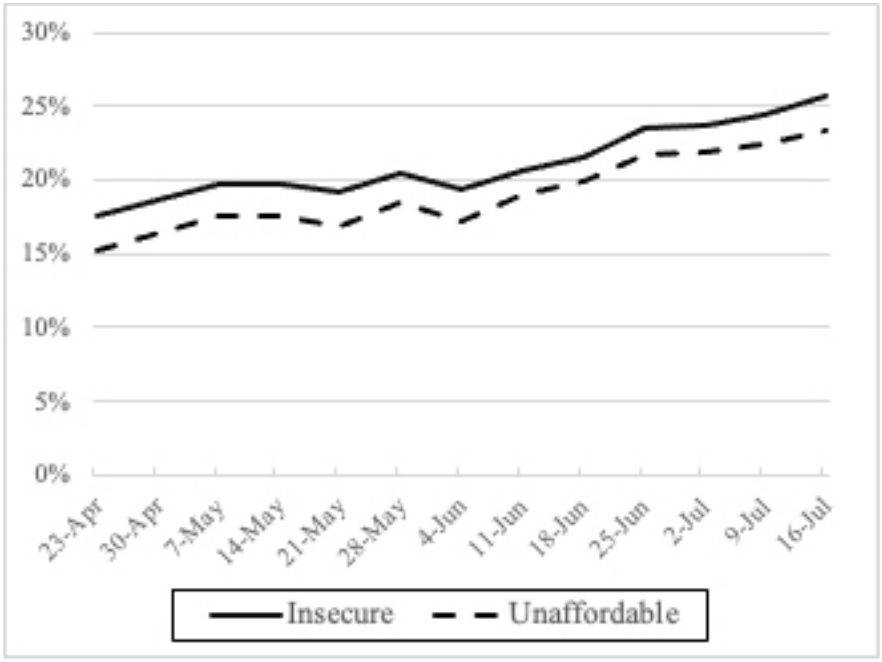
"Why did you not have enough to eat (or not what you wanted to eat)? Choose all that apply." In weeks 1 through 12, approximately 79.4 percent of the households we categorized as being food insecure stated that they "Couldn't afford to buy more food," 15.9 percent stated "Couldn't get out to buy food (for example, didn't have transportation, or had mobility or health problems that prevented you from getting out." 20.1 percent stated "Afraid to go or didn't want to go out to buy food," 8.2 percent "Couldn't get groceries or meals delivered to me," and 18.2 percent stated "The stores didn't have the food I wanted."

The overall finding from our results is that the economic and financial impacts have been the primary driver behind the rise in food insecurity. This is also apparent when examining food-insecure households and two measures of COVID-19's impact through the labor market: where either the respondent experienced a loss of employment income during the pandemic or where the respondent reported losing a job due to the pandemic's economic impact. Nearly three-quarters of food-insecure households (72.9 percent) and those experiencing unaffordability (74.3 percent) experienced one or both of these labor-market disruptions.

Food insecurity and unaffordability increased over time during the pandemic. Using Phase I of the HPS, we find that while there was some decline in food insecurity from week 2 through 4 and another decline from week 5 to 6, food insecurity had greatly increased from the level of December 2019 to the first week in late April and then increased more by week 12 where it reached a high of 26 percent. While there is a large drop in food insecurity between weeks 12 and 13, the levels are still high and then rise again. Earlier studies using the HPS did not catch this longer-range increase. Programs to reduce food insecurity fell far short of the great need during the pandemic. Despite the extra funding of unemployment benefits and of the SNAP program, more than 64 million people were food insecure by the week of July 16. This exceeded the dire predictions that more than 54 million would be food insecure.

Figure 6 traces the temporal changes in the percent of households that are food insecure and the percent that are food insecure because of unaffordability. Both show a distinct increase over the first 12 weeks. Overall food insecurity increased by 8 percentage points in Phase I. These increases are probably due to the accumulative impact of prolonged employment losses and exhaustion of household resources.

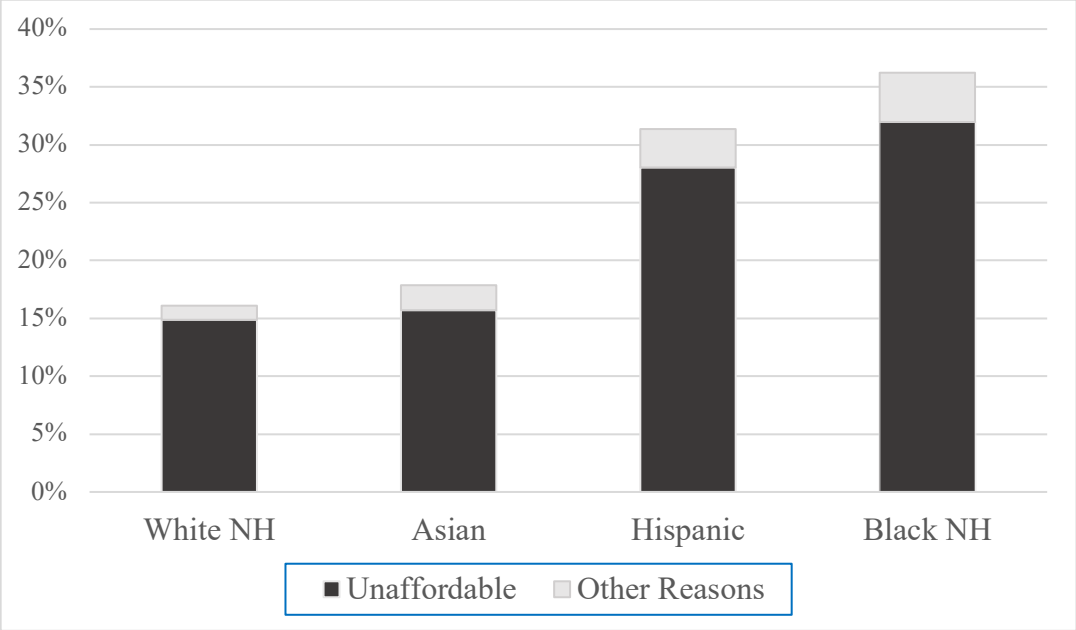
Figure 6: Percent of Households Food Insecure or Food Unaffordable in Phase I



Source: Authors' calculations from HPS data

Although food insecurity affected a broad segment of the population, the impacts varied systematically by demographic and socioeconomic characteristics, reproducing, and deepening racial and class disparities that existed prior to the pandemic. Figure 7 shows variation by race and ethnicity in both overall food insecurity (the total height of each bar) and food insecurity due to unaffordability using data pooled over the first 12 weeks of surveys. The groups are ranked in ascending order. African Americans had the highest rates, and Whites non-Hispanics (NH) had the lowest rates, a difference of 17 percentage points. Compared with White non-Hispanics, Blacks and Hispanics were more than twice as likely to experience food insecurity. This systematic inequality is produced by preexisting income and educational inequalities and reinforced by the disparate impacts of COVID-19 on the labor market.

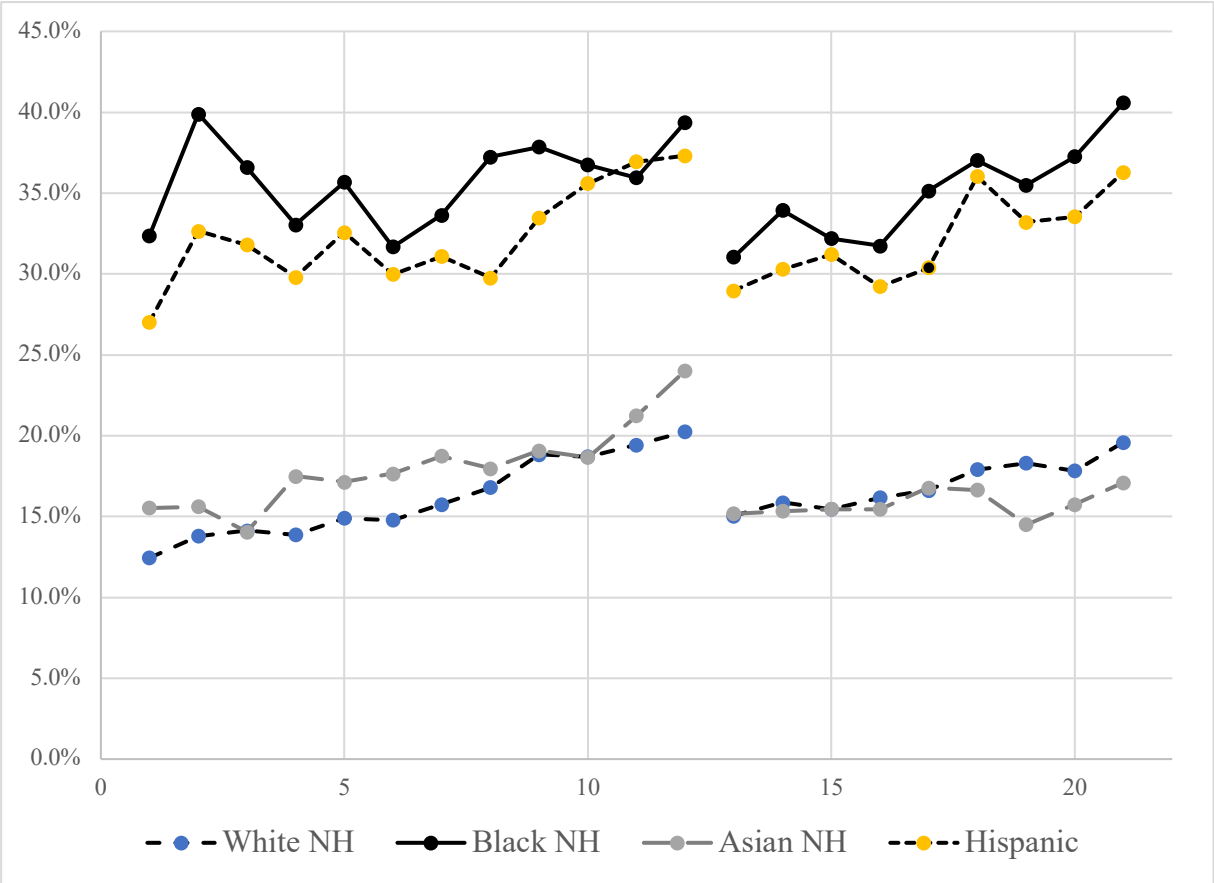
Figure 7 Food Insecurity and Unaffordability by Race



Source: Authors' calculations from HPS data

Figure 8 shows that food insecurity increased substantially for all races and ethnicities. By week 12 and again by week 21, White non-Hispanic households had food insecurity rates of about 20%. Black non-Hispanics went from food insecurity rates of 32.4% in week 1 to 39.4 in week 12. After a large drop between weeks 12 and 13, Black non-Hispanic rates went to a much higher rate of 40.6% in week 21. Only Asians had rates that seemed to flatten out in Phase II but then rose during Phase III of HPS. The poor budgets allowed by SNAP and WIC and the poor quality of most school food have done too little to prevent high levels of food insecurity in the U.S. Congressional debates over the food programs in the Farm Bill have shown that there is little sympathy for families who are food insecure. The denigration of these families seems to represent the use of negative stereotypes of Blacks and Hispanics. Congressmen have expressed concern that providing adequate diets would reduce the will to work rather than provide the energy for more work (Ayazi, Hossein and Elsheikh, 2015).

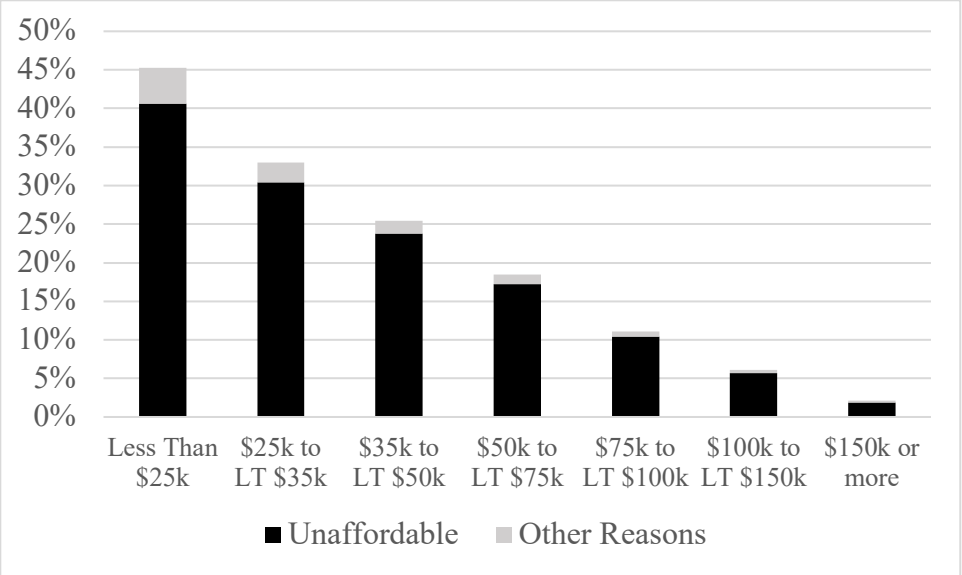
Figure 8 Food Insecure Households by Race, Weeks 1 To 21, HPS Data



Source: Authors' calculations from HPS data

Figure 9 shows food insecurity by income. Not surprisingly, food insecurity also varies by class background (based on income in previous year). Almost half (45 percent) of the poorest households were food insecure, due mostly to unaffordability. Food insecurity affects 2 percent of households with more than $150,000 in annual income. If we consider households middle-class with incomes from $35k to $150k, then across the middle-class there was some food insecurity in 2020. The reported incomes are from 2019 and the data suggests that middle-class families were not prepared for the pandemic recession as they joined food lines and learned to apply for federal programs.

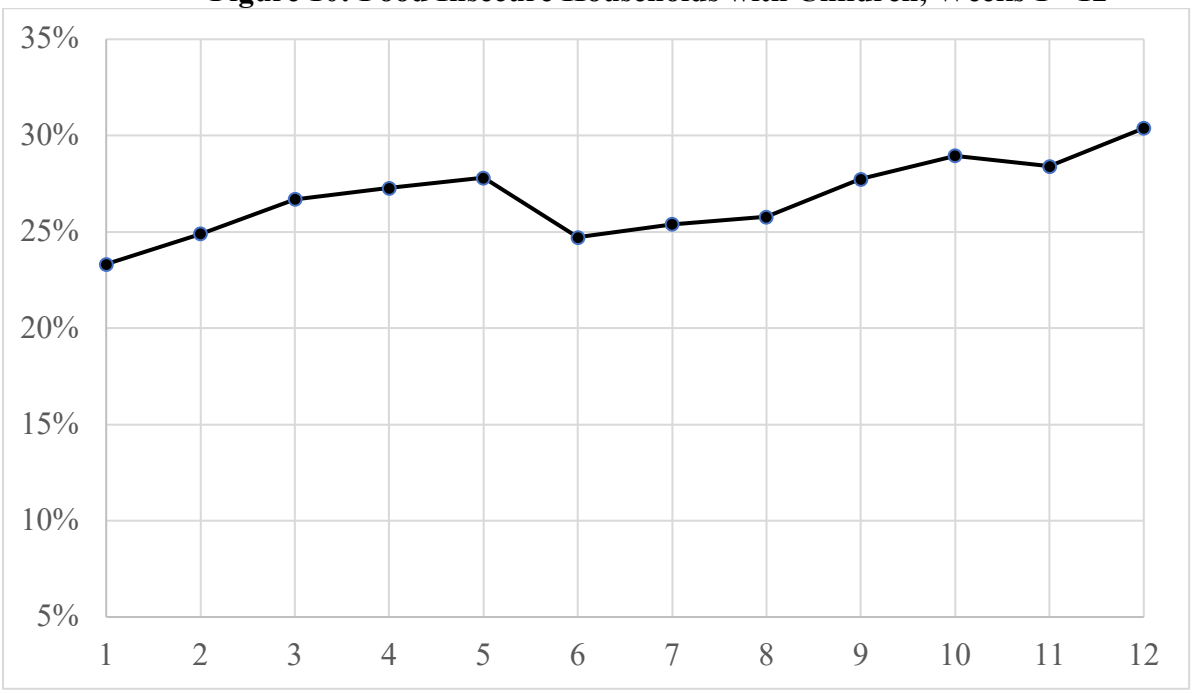
Figure 9 Food Insecurity and Unaffordability by Income



Source: Authors' calculations from HPS data

In Figure 10 we see the high rates of food insecurity for households with children. The rate goes from 23.3% in week 1 to 30.4% by week 12. Children were heavily impact by food insecurity before the pandemic and have far greater levels of insecurity during the pandemic. The child food insecurity rate in week 12 exceeds the rate of child insecurity in the recession year of 2009 (24% compared to 30.4%).

Figure 10: Food Insecure Households with Children, Weeks 1 - 12



Source: Authors' calculations from HPS data

CONCLUSION AND RECOMMENDATIONS

The economic and food benefits that the CARES Act and other COVID-19 programs provided likely prevented food insecurity from hitting even more extreme levels, but the data suggest that the need greatly exceeded the aid provided even before the pandemic. Despite hundreds of billions of dollars in economic aid provided to employers and individuals, we have found that food insecurity rose to levels that were far higher than during the Great Recession. The extra relief was needed, but inadequate. Of the federal food programs, only SNAP provided significant increases in funding. Efforts by the private sector and by churches were helpful but reached only a small percentage of those in need. From July to December 2020, federal legislators debated over different proposals to extend the supplemental unemployment insurance benefits and failed to provide any new relief. Future legislative prospects are unknown. Unemployment is likely to continue to be high going well into 2021; many schools remain closed or partially closed; and state and local governments will have to cut programs due to tax revenue declines. High levels of food insecurity will continue and may rise even further.Food insecurity and diet-related health problems affect millions of people every year. Ending food insecurity will require changes in policy and in funding. Policy changes and coordination of existing programs are needed at the state level as well as at the federal level. Many farmer's markets do not accept EBT cards or permit WIC purchases, reducing access to healthy fresh food in some neighborhoods. Many who are eligible for food benefits do not apply. States can work to increase awareness of food programs. Applications for food assistance can be simplified so they are easier to understand and complete. State agencies can be helped to work together to identify, educate, and enroll eligible parties (ASTHO Staff, 2019).

But a relatively simple solution to widespread food insecurity is providing more access to food through food stamps—now available on EBT cards through the SNAP program. A Hamilton Project proposal was that SNAP maximum benefits be increased by 15 percent during recessions. This was done in 2020 but was not enough. Another proposal was to increase average household payments by $42 to $46 a week (Gunderson**,** Kreider and Pepper, 2018). The SNAP program by itself is one of the country's most important antipoverty programs. Liana Fox (2018) estimates that SNAP benefits lifted 3.4 million people out of poverty in 2017 (if SNAP benefits were counted as income and using the Supplemental Poverty Measure). The Food Stamp Program and its replacement SNAP have been found to improve diets, lower diet-related illness, and improve economic sufficiency. With more attention to providing healthy foods and reaching more households with better benefits food insecurity, health care costs and poverty levels can all be greatly eased in the United States.

Even with increased benefits from nutrition programs, many families will still have low access to a healthy diet. Low-income minority neighborhoods are often food deserts where affordable healthy foods are in short supply (Larson and Larson). Communities and governments can support bringing in full-service supermarkets, farmer markets, and improved "corner stores" (the little mom and pop grocery stores). Programs like SNAP do not mean healthy diets are obtained. SNAP benefits can lead some to buy cheap processed foods with high levels of sodium and sugar. Eliminating candy and sugared sodas from SNAP eligible foods would be helpful. Higher benefits and stricter controls over junk food purchases would bring huge health benefits to all who are eligible for SNAP. The higher benefits would also stimulate the development of a more vibrant grocery business in low-income neighborhoods as well as stimulate the grocery industry

overall. Despite some lapses, government assistance is a critical need to protect families from insufficient and unhealthy food.

Morally, providing more aid is just the right thing to do. But even a strictly rational approach to food insecurity would be to increase access to healthy food as that would reduce health care costs and the loss of lives which would benefit all society. The costs compared to benefits of reducing food insecurity indicate a net positive payoff for the entire economy from reducing food insecurity. While Black and Hispanic families have been hardest hit by food insecurity, the racial bias that has been behind limiting SNAP and other federal programs has caused Whites as well as minorities to be harmed. We need to follow debates over access to food aid to determine where racial bias is at work so effective solutions can be proposed and adopted. Fighting bias in food insecurity will have large benefits to many whites who are vulnerable as well to minorities. Racism hurts everyone.

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