THE IMPACT OF THE COVID-19 PANDEMIC ON SOCIAL DETERMINANTS OF HEALTH FOR BLACK AND LATINX AMERICANS

By

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THE IMPACT OF THE COVID-19 PANDEMIC ON SOCIAL DETERMINANTS OF HEALTH FOR BLACK AND LATINX AMERICANS

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Abstract: The ongoing COVID-19 pandemic has exacerbated disparities in social determinants of health and highlighted pre-existing health inequities that have resulted in higher rates of COVID-19 morbidity and mortality among black and Latinx Americans. In this thesis, Bronfenbrenner's bioecological model is used to show how social determinants of health such as food security, economic security, housing security, and healthcare access influence one another and overall health status (Bronfenbrenner & Morris, 2006). The purpose of this study was to explore associations between race, ethnicity, and poorer pandemic outcomes in social determinants of health measures and overall health status. The sample for this study (n=2,813,359) was a nationally representative sample recruited by the U.S. Census Bureau using the Master Address File (MAF) for the Household Pulse Survey (HPS). The HPS was created to measure social and economic effects and various household experiences during the COVID-19 pandemic. HPS questions were used to examine how four social determinants of health varied between racial and ethnic groups throughout the pandemic: food security, economic security, housing security, and healthcare access. Additional measures were used to assess overall health status: COVID-19 diagnosis and self-reported health status. Chi-square analyses were used to measure associations between race and ethnicity and study variables. Significant associations were followed up with Cramer's V tests to measure the effect size of associations. Study findings show that black and Latinx Americans experienced disproportionate rates of food insecurity and housing insecurity. While black and Latinx respondents reported lower rates of insurance coverage, higher rates of deferred mental health services, greater rates of COVID-19 diagnosis, and poorer overall health status when compared to white and non-Latinx respondents, Cramer's V tests showed no association between race and ethnicity these health variables. Results suggest historical disparities in social determinants of health may be driving the health inequities seen in COVID-19 health outcomes across racial and ethnic lines. Further research is needed to fully understand the impact of the COVID-19 pandemic on social determinants of health for populations of color. Swift intervention is necessary to prevent future health disparities that result from these increasing inequities.

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CHAPTER I

INTRODUCTION

Throughout the COVID-19 pandemic, populations of color have experienced disproportionate rates of COVID-19 morbidity and mortality compared to the non-Latinx white population (Bassett, et al., 2020; Price-Haywood et al., 2020), with Black, Indigenous, and Latinx Americans having an age-adjusted death rate three times that of White Americans (Center for Disease Control and Prevention, 2021). Black and Latinx persons are overrepresented in COVID-19 hospitalizations, demonstrating the severity of illness within these populations (Hsu et al., 2020). Racial and ethnic minorities experience a higher prevalence of comorbidities associated with worsened COVID-19 outcomes including hospitalization, ventilation, and death (Qeadan et al., 2021). These disparities in morbidity and mortality are largely extensions of the racial and ethnic disparities seen in overall health status, healthcare quality and access, and other social determinants of health. Preexisting economic and social disparities are intensifying, leaving Black and Latinx Americans grossly vulnerable to poorer outcomes in health, housing, employment, and food security because of the current health crisis and its negative impact on the economy and labor force. To address poor health outcomes, we must first identify the underlying causes of health disparities. Americans of color often

face co-occurring disadvantages making them more vulnerable to poor and inequitable health outcomes (Braveman et al., 2011). By working to address social determinants of health, we are combating social and economic influences that can negatively impact health across the lifespan. Improving social determinants of health can lead to a happier, healthier, more equitable society with fewer barriers (Healthy People 2020, 2021; CDC, 2020).

This study aims to measure the impact of the COVID-19 pandemic on social determinants of health and health outcomes across racial and ethnic lines using the Household Pulse Survey (HPS). The HPS consists of a sample of 2,813,359 respondents at 34 time points throughout the pandemic, from April 2020 to July 2021. The HPS was administered by the U.S. Census Bureau throughout the COVID-19 pandemic to better understand pandemic effects on various aspects of quality of life and health measures (U.S. Census Bureau, 2021).

Data from this study were analyzed using chi-square analysis to measure associations between race and ethnicity and outcomes in social determinants of health measures and overall health status across the COVID-19 pandemic. Due to the large sample size for this study, significant chi-square analyses were anticipated. Significant associations were then measured using Cramer's V test to measure effect size and assess the strength of associations.

CHAPTER II

REVIEW OF LITERATURE

Social Determinants of Health and Health Disparities

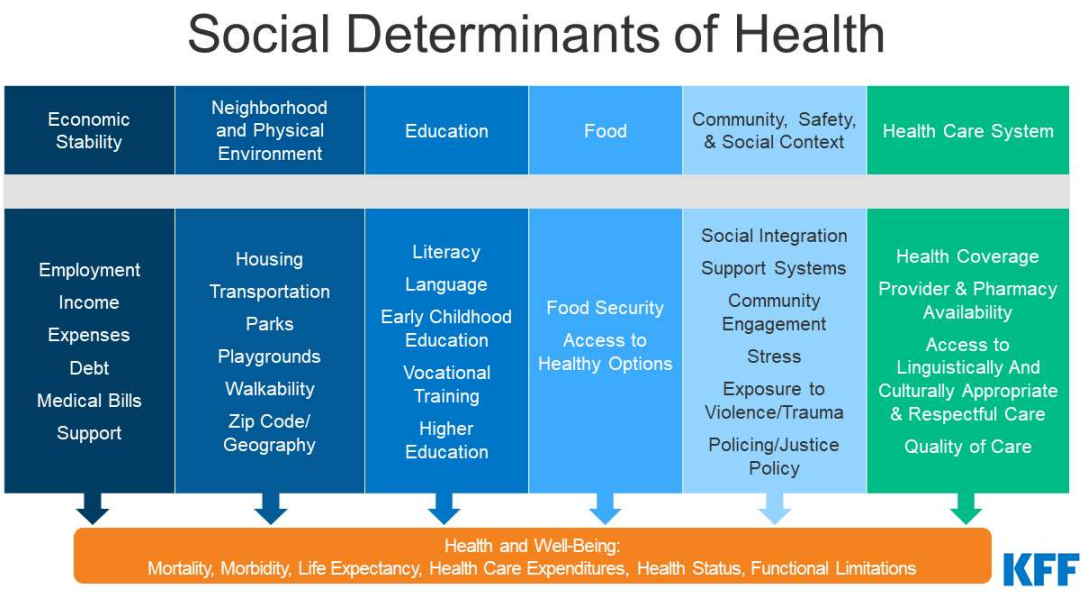
The Black Report on Inequalities in Health, published in 1980, was the first piece of literature to identify the connection between social and structural conditions and health equity (Black et al., 1980). The report by Black et al (1980) found improvements in overall health, but pervasive racial health inequalities were present. The Centers for Disease Control and Prevention defines social determinants of health as conditions in the places where people live, work, and play that affect a wide range of health and quality-of-life risks and outcomes (CDC, 2020). Social determinants of health can be categorized into five overarching categories: healthcare access and quality, education access and quality, social and community contexts, economic stability, and neighborhood and built environment (Healthy People 2030, 2021). Over the last 40 years, researchers have continued to study how social determinants of health impact disparate outcomes in diverse and disadvantaged populations. Populations of color continue to face significant barriers in social determinants of health, particularly for Black and Latinx populations, who fare poorer in nearly every social determinant of health measure and many health

outcomes (Artiga, 2020). There is also an argument for biological differences by race and ethnicity that explain disease prevalence and outcomes (Fine et al., 2005). Research shows that humans share 99.9% of their DNA, and most DNA variations occur within populations and not across them (Fine et al., 2005).

To understand health disparities, such as those we have seen in mortality and morbidity throughout the course of the COVID-19 pandemic, we must first understand how social determinants depicted in Figure 1 below, and various other factors, influence one's overall health and wellbeing across the lifespan.

Figure 1

Social Determinants of Health



Source: George Kaiser Family Foundation, 2018

Theoretical Framework

Bronfenbrenner's Bioecological Systems Theory of Development

Bioecological Systems Theory identifies ways in which various external systems and a person's characteristics and biology interact with one another to influence human behavior and overall human development (Bronfenbrenner & Morris, 2006). Bronfenbrenner first proposed the Ecological Systems Theory of Human Development in 1979, where he detailed the interactions that occur between an individual's characteristics and the contexts of one's environment. He defined four ecological systems within his model that surround an individual: the microsystem, mesosystem, exosystem, and macrosystem (Bronfenbrenner, 1979). Later, Bronfenbrenner expanded this model to address the need for greater importance to be placed on the person, time, and proximal processes in human development which became the core of his refined Bioecological Systems Theory (Bronfenbrenner & Morris, 1998). Proximal Processes as proposed by Bronfenbrenner and Morris in 1998 are the drivers of human development not only through childhood, but across the lifespan:

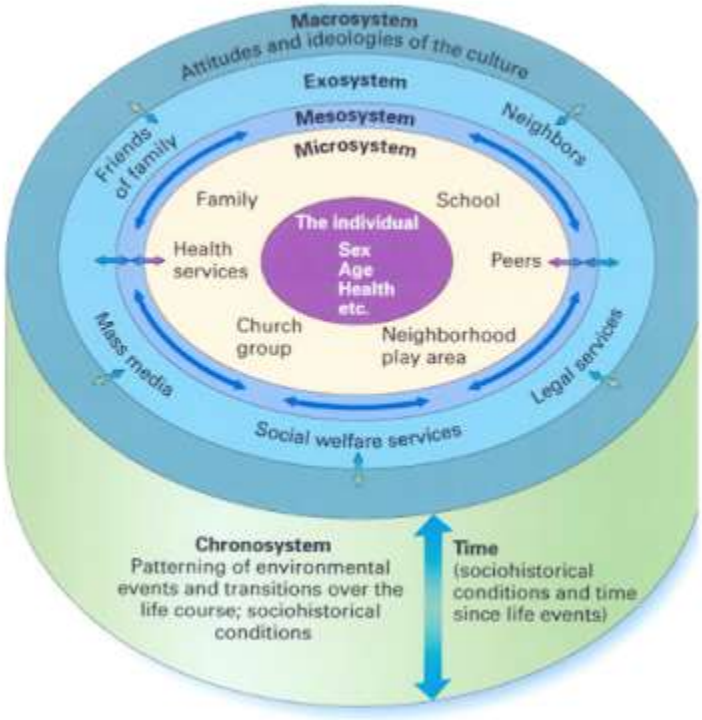
> Especially in its early phases, but also throughout the life course, human development takes place through the processes of progressively more complex reciprocal interaction between an active, evolving biopsychosocial human organism and the persons, objects, and symbols in its immediate environment. To be effective, the interaction must occur regularly over extended periods. Such enduring forms of interaction in the immediate environment are referred to as proximal processes. (p. 996)

While Bronfenbrenner focused primarily on child development, his bioecological theory can be applied across the lifespan and is viewed as a lifespan approach for this research.

Understanding how each system within this model influences development helps to describe how the social determinants of health that fall within each of these systems impact overall health, well-being, and quality of life for an individual. Housing, economic security, food security, and access to healthcare are just a few of the many keys that are predictive of health disparities and overall health status (Kaiser Family Foundation, 2020).

Figure 2

Bronfenbrenner's Ecological Systems Model (Santrock, 2007).



Microsystem

The microsystem is the first layer of Bronfenbrenner's model, which sits closest to the person and includes interpersonal relationships and immediate environments with

which an individual is both influenced and has an influence. These include relationships with family, one's home, and first-hand experiences (Bronfenbrenner & Morris, 2006).

Mesosystem

The mesosystem is the relationship or link between various aspects of the microsystem (Bronfenbrenner & Morris, 2006).

Exosystem

The exosystem is composed of relationships between two settings. While this does not directly affect an individual, the exosystem encompasses bigger social systems that carry indirect influence (Bronfenbrenner & Morris, 2006). This could include effects from the likes of one's community, city government, mass media, and health agencies.

Macrosystem

The macrosystem holds larger cultural and social contexts that influence development such as societal norms, political systems, systemic barriers (Bronfenbrenner & Morris, 2006).

Chronosystem

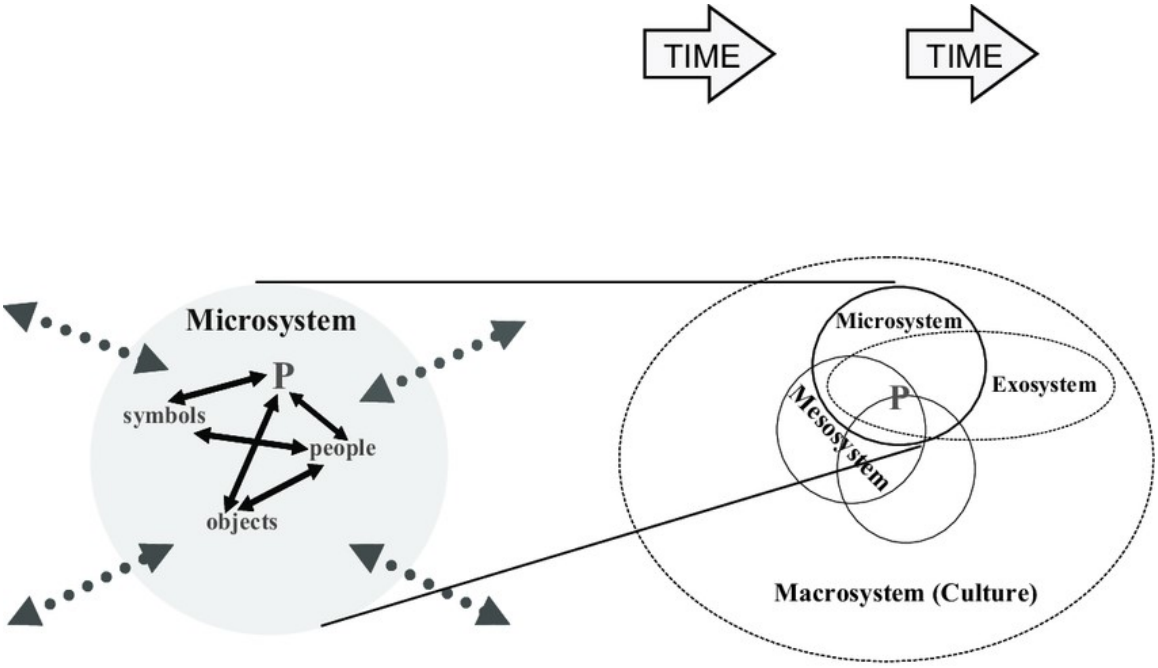
The chronosystem proposes that individuals are constantly interacting with the various systems in bi-directional ways across time. This includes periods of one's life when influences occur and considers the historical context of when development is occurring (Bronfenbrenner & Morris, 2006). This is especially important when researching present-day racial and ethnic disparities that are extensions of racism and discrimination that remain embedded in our systems across history.

Process-Person-Context-Time Model (PTTC)

To understand developmental influences on health, it is not enough to simply identify differences in these systems, for human development is more complicated than that. To better describe the importance of the person and aspects of time on development, Bronfenbrenner and Morris developed the PTTC Model (2006). In addition to proximal processes, the biological characteristics of an individual, noted as the 'person' greatly influence the relationships and links that occur within and between 'context', the interconnected systems detailed above. Time serves greater importance in this developmental model, including the chronosystem and detailing how happenings during specific proximal processes influence development (Bronfenbrenner & Morris, 2006).

Figure 3

Bronfenbrenner's PTTC Model



Source: Tudge (2008)

Disparities in Health Outcomes

Using Bronfenbrenner's Bioecological Theory, we can recognize the effect of bi-directional social and economic constructs on health outcomes, particularly for populations of color and marginalized populations. Inequities in social determinants of health help to explain various health disparities found between racial and ethnic groups (Healthy People 2020, 2021). Obesity prevalence is highest among black Americans at 49.6 %, followed by Latinx and non-Hispanic whites at 44.89% and 42.2% respectively (CDC, 2020). Non-Hispanic blacks have the highest cancer death rate, and the lowest survival rate (American Cancer Society, 2019). Diabetes rates are highest for black populations at 16.4%, followed by Latinx Americans at 14.7%, and non-Hispanic Whites at 11.9% (National Diabetes Statistics Report, 2020). While the prevalence of heart disease is 2% higher for white populations than black populations, black Americans are most likely to suffer from hypertension (Laurencin & McClinton, 2020) and die from heart disease at much higher rates (National Center for Health Statistics, 2019). The increased rates of morbidity and mortality from certain diseases are, in part, a result of the lower quality of care received by populations of color due to racial and ethnic disparities in healthcare access, healthcare quality, and discrimination (Collins & Rocco, 2014; Nelson, 2002); which contribute to disparities in health overall (Fiscella, 2007). In 2001, Congress requested the Institute of Medicine (IOM) to evaluate the extent of disparities within the U.S. healthcare system. They found racial and ethnic disparities present even when insurance, income, and condition of patients were equivalent (Nelson, 2002). These health disparities are the disease caused by inequitable situations and experiences faced by people of color in various sectors of life. For this study, we will be

focusing primarily on differences in social determinants of health across racial and ethnic lines.

Access to Healthcare

Black and Latinx individuals are less likely to be insured during adulthood (Kirby & Kaneda, 2010), and are more likely to reside in medically underserved areas, defined by the Health Resources and Services Administration as areas with insufficient primary care providers, high rates of infant mortality, poverty, or an aging population (HRSA, 2021), conditions which often limit options for care. The number of uninsured non-elderly individuals sharply decreased by 41% between 2010 and 2016 following the passage of the 2010 Patient Protection and Affordable Care Act (U.S. Department of Health and Human Services, 2021), but racial and ethnic disparities remained present. Modifications made under the Trump administration, such as increases in insurance premiums, repealing the individual mandate penalty, and the addition of work requirements for Medicaid caused the rate of uninsured individuals to break trend and begin rising in 2017 (Congressional Budget Office, 2019; Sommers et al., 2020; U.S. Census Bureau; 2021). In 2019, uninsured rates for black and Latinx Americans were 11.4% and 20% respectively compared to 7.8% for non-Hispanic whites (Artiga et al., 2019). By 2020, uninsured rates for black and Latinx populations were 14.3% and 24.9% respectively, compared to 7.7% for non-Hispanic white Americans (Keisler-Starkey & Bunch, 2021).

Uninsured individuals are more likely to postpone or neglect needed medical care, with 50% reporting a temporary disability due to their health condition (Hadley, 2003). Free or reduced-cost medical facilities are considered a 'safety net' for low-income and

marginalized individuals, but the treatment received is less adequate and of poorer quality when compared to insured individuals (Nelson, 2002). Additionally, research shows that populations of color are less likely to receive necessary treatment for various conditions, even after adjusting for coverage (Nelson, 2002; Geiger, 2003). Disparities in health coverage have left minority populations especially susceptible to COVID-19 complications due to the absence of affordable and accessible healthcare. It is important to understand the interconnectedness between socioeconomic status and healthcare access as these are two of the social determinants of health.

The Intersection of Health and Socioeconomic Status

Socioeconomic status (SES) is measured by income, educational achievement, employment status, financial security, and social class (American Psychological Association, 2020). Low SES is associated with reduced healthcare access, poorer health outcomes (Smith & Kington, 1997; Adler et al., 1994), and lower life expectancy (Stringhini et al., 2017). Race and ethnicity are correlated with SES (U.S. Census Bureau, 2009), as people of color fare worse in each of the SES measures, on average. Black and Latinx populations have historically experienced disproportionate levels of poverty (U.S. Census Bureau, 2020). In 2019, 73.7% of uninsured individuals reported that they did not have healthcare coverage due to the cost (Tolbert et al., 2019). Before the COVID-19 pandemic, poverty rates for black and Latinx Americans reached historic lows at 18.8% and 15.7% respectively, while rates for non-Hispanic White Americans decreased to 9% (Creamer, 2020). Data from the U.S. Department of Health & Human Services (2020) show overall poverty rates increasing by 3% between August and December 2020. The swift policy response through various COVID-19 related safety net programs such as

stimulus payments and increased unemployment benefits greatly padded the impact of increased poverty rates that could have potentially been detrimental to black and Latinx Americans (Economic Policy Institute, 2021).

Employment and Economic Security

Employment status is an element of socioeconomic status and overall economic security, a social determinant of health (George Kaiser Family Foundation, 2018). Economic disadvantages faced by black and Latinx populations create increased difficulty in meeting one's basic needs and accessing health care (Health People 2030, 2021). Nelson (2002) found that racial and ethnic disparities present within the U.S. health care system were, in part, extensions of larger historic economic disparities in various sectors of American life. Historically, black and Latinx populations fare worse, on average, in various economic measures (Reeves et al., 2016; PayScale, 2019; Horowitz et al., 2020).

Horowitz, et al. (2020) reported a 39% increase in U.S. income inequality between 1980 and 2018, topping that of all other G-7 countries. PayScale (2019) estimates black men earn $0.87, while Latinx and Native Americans earn $0.91 to every dollar earned by a white man. As the wealth of the upper class continues to rise, the shares of wealth held by the lower class continue to fall, widening the wealth gap and reducing economic opportunity and mobility for the most disadvantaged of Americans (Horowitz et al., 2020). In 1990, white households owned 90.7% of all household wealth in the United States, while black and Latinx Americans owned 3.8% and 2.1% respectively. Today, these numbers have only altered slightly, with household wealth decreasing to 83.9% for whites and increasing to 4.1% and 2.5% for black and Latinx

Americans (Bhutta et al., 2020**)** despite their representation as 13.4% and 18.5% of the American population (U.S Census Bureau, 2019). Reeves et al. (2016) propose five dimensions of poverty: low household income, limited education, lack of health insurance, residing in a low-income area, and high rates of unemployment. Black and Latinx Americans suffer disproportionately at each level and are more likely than Caucasians to experience cooccurring disadvantages (Reeves et al., 2016). This persistent wealth gap has left minorities especially vulnerable to possible increases in financial hardships caused by the pandemic.

Many members of minority populations experience discrimination within the workplace. In a 2004 survey, 33% of black respondents and nearly 20% of Latinx and Asian respondents reported experiencing racial discrimination at work (NPR, 2017). Bertrand and Mullainathan (2004) found that white-sounding names on resumes received 50% more call-backs than black-sounding names. The racial discrimination that is present and persistent for minorities in the workforce can lead to reduced productivity within the labor market, and difficulty in obtaining employment (Lang & Lehmann, 2012). Unemployment rates have traditionally been disproportionately high for members of minority populations, with the black unemployment rate often being double that of white Americans (U.S. Bureau of Labor, 2020). In October of 2019, unemployment rates for black and Latinx Americans were 5.4% and 4.1% respectively, compared to 3.2% for non-Hispanic whites (U.S. Bureau of Labor Statistics, 2020). The pandemic caused unemployment rates to sore, leaving minority populations most disadvantaged. In April 2020, employment rates for black and Latinx men hit a historic low (Long et al., 2020). In June 2020, the white and black unemployment gap was the widest it had been in half a

decade, with white laborers returning to work much quicker than black laborers (Marte, 2020). The leisure and hospitality sectors were impacted most heavily by the pandemic, which encompasses jobs that are mostly held by women, young workers, and members of racial and ethnic minorities (Long et al., 2020).

Housing Security

Practices such as redlining have led to low homeownership rates for minorities. Nardone et al. (2020) found nine historically redlined areas across the United States to be associated with higher rates of cancer, asthma, and the likelihood of being uninsured. Black and Latinx households lost 48% and 44% respectively of their household wealth due to discriminatory lending practices following the financial crisis of 2008, many of which are still recovering today (Center for American Progress, 2019). A 2018 study found that 45% of black and 31% of Latinx individuals report experiencing racial discrimination when trying to buy or rent a home (NPR, 2017). 75.8% of non-Latinx whites are homeowners, compared to 46.4% and 50.9% of black and Latinx respectively (U.S. Census Bureau, 2020). It is not only more difficult for members of minority populations to obtain homeownership status, but there are also additional inequalities in the value of homes located in neighborhoods occupied by populations of color. Homes in black neighborhoods are undervalued by $48,000 on average (Perry et al., 2018). In 2019, 58% and 53% of black and Latinx households were rented, compared to less than 31% of white households (U.S. Census Bureau, 2019). Of extremely low-income renters, with household incomes at or below the poverty level, 20% are black households, 18% are Native American, 16% are Latinx households, and 6% are non-Latinx white households.

White renters are more likely than any minority to have household incomes above 80% of the area median income (National Low-Income Housing Coalition, 2020).

Racial and ethnic disparities in housing were pressing before the economic crisis caused by the ongoing pandemic, with 48% of rented households' income falling below the median income level in the first quarter of 2020 (U.S. Census Bureau, 2020). The Federal Eviction Moratorium, in place from September 4, 2020, to December 31, 2020, protected millions of renters from being evicted due to nonpayment (National Low-Income Housing Coalition, 2020). The moratorium applied to public housing, Housing Choice Vouchers, Section 8, the low-income housing tax credit program, and federal mortgage programs that are most used by racial and ethnic minorities. With the moratorium expiring, back rent will be due, which could be catastrophic for black and Latinx populations that have been hit the hardest with economic struggles throughout the COVID-19 pandemic.

Food Insecurity

Food insecurity is defined as a lack of consistent access to enough food for an active and healthy life (USDA, 2020). It is not the state of hunger, but a state of lacking the adequate resources to obtain needed sustenance. Food insecurity is not an isolated condition but is interconnected with other issues such as pre-existing health concerns, low income, lack of affordable housing, and lack of social support that form the social determinants of health (Healthy People 2020, 2020). Black and Latinx households have faced levels of food insecurity above the national average for the last 25 years (USDA, 2020; Feeding America, 2020). Much like levels of unemployment and poverty, black Americans are twice as likely as non-Latinx whites to be food insecure. This can be seen

geographically, with eight of the top ten food insecure counties in the United States having population demographics of 60% or more black Americans (Feeding America, 2020). Latinx households also suffer disproportionately, despite having lower rates of unemployment. 81% of the Latinx households served by Feeding American have at least one working adult in the home, but the income does not meet the food needs of the household (Feeding America, 2020). Black and Latinx occupied neighborhoods are more likely to be in food deserts, with fewer supermarkets (Morland, 2002), and more fast-food options (Block, 2004) which can lead to a poorer health status overall.

Before the COVID-19 pandemic, an estimated 37 million Americans were food insecure, the lowest rate since the Great Recession (Feeding America, 2020). Consequences of the ongoing pandemic, including loss of income, have caused food insecurity levels to rise drastically, reversing much of the progress made over the last decade. Nearly 40% of the increase in food bank utilization throughout 2020 was by individuals experiencing food insecurity for the first time (Feeding America, 2020). Households that were facing food insecurity before the pandemic are now suffering at more severe rates (Wolfson, 2020). Feeding America estimates 13.2 million more Americans are facing food insecurity because of the COVID-19 pandemic (2020).

Study Purpose and Hypotheses

The COVID-19 pandemic has led to increased interest in social determinants of health to identify how differences in social and economic standing and contexts affect quality of life and influence COVID-19 health outcomes. As cited throughout this study, many studies have found disparities in health outcomes and inequities in various social determinants that are shown to contribute to overall health and wellbeing. However, few

researchers have used the Household Pulse Survey data, a nationally representative survey collected by the U.S. Census Bureau across the course of the pandemic, to measure various social and economic effects of COVID-19. The purpose of this study is to measure the social and economic impacts of the pandemic on social determinants of health including housing, employment, food security, health access, and overall health status by race and ethnicity during the first 15 months of the COVID-19 pandemic.

Hypotheses

Hypothesis 1 Black and Latinx Americans experienced poorer outcomes related to the social determinants of health than non-Latinx and white Americans did.

Hypothesis 1a Black and Latinx Americans have experienced a disproportionate loss of employment compared to non-Latinx and white Americans throughout the COVID-19 pandemic.

Hypothesis 1b Black and Latinx Americans have experienced disproportionate rates of housing insecurity compared to non-Latinx and white Americans throughout the COVID-19 pandemic.

Hypothesis 1c Black and Latinx Americans have experienced disproportionate rates of food insecurity compared to non-Latinx and white Americans throughout the COVID-19 pandemic.

Hypothesis 1d Black and Latinx Americans have experienced reduced access to healthcare compared to non-Latinx and white Americans throughout the COVID-19 pandemic.

Hypothesis 2 Black and Latinx Americans experienced poorer health throughout the pandemic than non-Latinx and white Americans did.

Hypothesis 2a Black and Latinx Americans have contracted COVID-19 at higher rates compared to non-Latinx and white Americans throughout the COVID-19 pandemic.

Hypothesis 2b Black and Latinx Americans have poorer self-reported health status compared to non-Latinx and white Americans during the COVID-19 pandemic.

CHAPTER III

METHODOLOGY

Data

The current study uses data from the Household Pulse Survey (HPS), conducted by the U.S. Census Bureau in collaboration with the USDA Economic Research Service (ERS), Bureau of Labor Statistics (BLS), National Center for Health Statistics (NCHS), National Center for Education Statistics (NCES), and the Department of Housing and Urban Development (HUD). The Household Pulse Survey is a 20-minute online survey that was created via Qualtrics to measure social and economic effects and various household experiences during the COVID-19 pandemic. The Household Pulse Survey launched in April of 2020 and has provided biweekly data in near real-time on how Americans' have been affected by the ongoing COVID-19 pandemic.

Participants and Procedure

The Census Bureau randomly chose addresses across the country that were scientifically drawn from the Census Bureau Master Address File (MAF) to be representative at three geographical levels: 1- the 15 largest Metropolitan Statistical Areas (MSAs), 2- state-level estimates for each of the 50 U.S. states and the

District of Columbia, 3- national-level estimates. The drawn sample was inflated to account for anticipated lower response rates while allowing for accurate estimates at the first and second levels. For this study, we will focus on national-level estimates using the first 34 waves of data from the first four phases of the HPS survey. Phase 1 of the HPS Survey was collected weekly from April 23, 2020, through July 5, 2020. Phase 2 of the HPS Survey was collected on a biweekly basis from August 19, 2020, through October 26, 2020. Phase 3 of the HPS Survey was collected on a biweekly basis from October 28, 2020, through March 29, 2021. Phase 3.1 of the HPS Survey was collected on a biweekly basis from April 14, 2021, through August 2, 2021.

IBM Statistical Package for Social Sciences (IBM SPSS) 28.0 was used to analyze all data for this study. A total of 2,813,359 HPS survey responses were collected in waves 1-34. N= 2,813,359. Public use micro-data sets for each of the 34 waves were compiled into one complete data set including 2,813,359 unweighted observations. Each wave of data contained an average of 70,000 to 90,000 individual survey responses. While a small number of surveys were taken by repeating respondents, the responses are treated as unique for this study. Survey instruments altered slightly between certain waves. Some of the measures in this study contain variable data from wave subsets, which are noted by each measure. Data with reported responses for both variables in each crosstabulation were used to run chi-square and Cramer's V analyses.

Measures

Demographic variables

Demographic variables used in this study include race, ethnicity, income, and education. These demographics were collected using the following Household Pulse

Survey questions: (a) What is your race? Please select all that apply (b) are you of Hispanic, Latino, or Spanish origin? (c) What is/was your 2020 total household income after taxes? (d) What is the highest degree or level of school you have completed?

Social Determinants of Health

This analysis examined four specific social determinants of health: housing security, employment status, food security, and healthcare access across racial and ethnic lines.

Food Security

For this study, we measure food security using three items from the Household Pulse Survey: current food security, prior food security, and food security confidence.

Current food security. Current food security was measured with a 4-point scale in all 34 waves of HPS data using the following question: Getting enough food can also be a problem for some people. In the last 7 days, which of these statements best describes the food eaten in your household? Responses were coded as 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; or 4) often not enough to eat. Response options coded as 3 and 4 are considered food insecure.

Prior food security. Prior food security was measured with a four-point scale in waves 1-22 of HPS data using the following question: Getting enough food can also be a problem for some people. Which of these statements best describes the food eaten in your household before March 13, 2020? Responses to this item were coded as 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; or 4) often not enough to eat. Response options coded as 3 and 4 are considered food insecure.

Food Security Confidence. Food security confidence was measured with a four-point scale in waves 1-22 of HPS data using the following item: How confident are you that your household will be able to afford the kinds of food you need for the next four weeks? Responses to this item were coded as 1) not at all confident; 2) somewhat confident; 3) moderately confident; or 4) very confident.

Employment and Economic Security

For this study, we measure economic security using two items from the Household Pulse Survey: employment loss and expected employment loss.

Employment Loss. Employment loss was measured in waves 1-27 of HPS data with the following question: Have you, or has anyone in your household experienced a loss of employment income since March 13, 2020? Responses were coded as 1) yes; or 2) no.

Expected Employment Loss. Expected employment loss was measured in waves 1-33 of HPS data with the following question: Do you expect that you or anyone in your household will experience a loss of employment income in the next 4 weeks because of the coronavirus pandemic? Responses were coded as 1) yes; or 2) no.

Housing Security

For this study, we measure housing security using three items from the Household Pulse Survey: rent payment status, mortgage payment status, and housing payment confidence.

Rent Payment Status. Rent payment status was measured in waves 13-34 of HPS data with the following question: Is this household currently caught up on rent payments? Responses to this item were coded as 1) yes; or 2) no.

Mortgage Payment Status. Mortgage payment status was measured in waves 13-34 of HPS data with the following question and response options: Is this household currently caught up on mortgage payments? Responses were coded as 1) yes; or 2) no.

Housing Payment Confidence. Housing payment confidence was measured in waves 1-34 of HPS data using the following question: How confident are you that your household will be able to pay your next rent or mortgage payment on time? Responses were coded as 1) not at all confident; 2) slightly confident; 3) moderately confident; 4) highly confident; or 5) payment is/will be deferred.

Healthcare Access

For this study, access to healthcare was measured using three items from the Household Pulse Survey: public health insurance, private health insurance, and deferred medical care.

Public Health Insurance. Public health insurance was coded as a dichotomous variable by HPS, using this scheme: 1) Yes, Has Public Health Insurance; or 2) No Public Health Insurance.

Private Health Insurance. Private health insurance was measured and recoded by HPS as a dichotomous various using the following scheme: 1) Yes, Has Private Health Insurance; or 2) No Private Health Insurance.

Deferred Mental Health Care. Deferred medical care was measured in waves 13-34 of HPS data using the following question: At any time in the last 4 weeks, did you

need counseling or therapy from a mental health professional, but DID NOT GET IT for any reason? Responses were coded as 1) yes; or 2) no.

Health

For this study, health status was measured using two items from the Household Pulse Survey: health status, and COVID-19 diagnosis.

Health Status. Health status was measured in waves 1-21 of HPS data using the following question: Would you say your health, in general, is excellent, very good, good, fair, or poor? Responses were coded 1) excellent; 2) very good; 3) good; 4) fair; or 5) poor.

COVID-19 Diagnosis. COVID-19 diagnosis was measured in waves 22-34 of HPS data using the following question: Has a doctor or other health care provider ever told you that you have COVID-19? Responses were coded as 1) yes; or 2) no.

Univariate Statistics

Table 1

Univariate Statistics

Variable		Valid %
Ethnicity	N= 2813359	
	Not Hispanic, Latino or Spanish	90.9
	Hispanic, Latino or Spanish	9.1
Race	N= 2813359	
	White	82.4
	Black	7.9
	Asian	4.9
	Other or Multiple Races	4.8
Income	N= 2264046	
	Less than $25,000	10.4
	$25,000 - $34,999	8.7
	$35,000 - $49,999	10.9
	$50,000 - $74,999	17.6
	$75,000 - $99,999	14.7
	$100,000 - $149,999	18.4
	$150,000 - $199,999	8.9
	$200,000 and above	10.5
Education	N= 2813359	
	Less than high school	0.6
	Some high school	1.5
	High school graduate	11.7
	Some college, no degree	21.5
	Associate degree	10.5
	Bachelor's degree	29.0
	Graduate Degree	25.3
Employment Loss	N= 2310090	
	Yes	39.0
	No	61.0
Expected Employment Loss	N= 2729355	
	Yes	21.3
	No	78.7
Current Food Security	N= 2618819	
	Enough of the kinds of food we wanted to eat	69.7
	Enough, but not always the kinds of food we wanted to eat	23.9
	Sometimes not enough to eat	5.1
	Often not enough to eat	1.3

Table 1 (cont'd)

Variable		Valid %
Prior Food Security	N= 1774596	
	Enough of the kinds of food we wanted to eat	77.2
	Enough, but not always the kinds of food we wanted to eat	17.5
	Sometimes not enough to eat	4.2
	Often not enough to eat	1.1
Housing Status	N= 2374917	
	Owned free and clear	25.5
	Owned with a mortgage or loan	49.5
	Rented	23.7
	Occupied without payment of rent	1.3
Mortgage Current	N= 685349	
	Yes	93.4
	No	6.6
Rent Current	N= 318191	
	Yes	87.6
	No	12.4
Confidence paying rent/mortgage	N= 1732008	
	No confidence	4.8
	Slight confidence	7.9
	Moderate confidence	17.1
	High confidence	68.7
	Payment is/ will be deferred	1.5
Private Health Insurance	N= 1385664	
	Yes, has private health insurance	81.3
	No private health insurance	18.7
Public Health Insurance	N= 1318201	
	Yes, has public health insurance	40.7
	No public health insurance	59.3
Deferred Mental Health Care	N= 2344060	
	Yes	26.0
	No	74.0
Health Status	N= 1654338	
	Excellent	20.9
	Very good	36.5
	Good	27.6
	Fair	12.1
	Poor	2.8
Covid Diagnoses	N= 942424	
	Yes	11.3
	No	88.1
	Not Sure	0.7

CHAPTER IV

RESULTS

Demographics

Demographic percentages are reported in Table 1. Looking at race and ethnicity, 82.4% of respondents identified as white, 7.9% identified as black, 4.9% as Asian, and 4.8% identified as other or multiple races. 90.9% reported not being of Hispanic, Latino, or Spanish descent, while 9.1% reported being Hispanic, Latino, or Spanish, classified as Latinx for this study. Regarding educational attainment, most of this sample (86.3%) obtained some form of post-secondary education with 21.5% reporting some college, no degree received, 10.5% holding an associate degree, 29% holding a bachelor's degree, and 25.3% holding a graduate degree. 2.1% report not attending or completing high school, and 11.7% report being a high school graduate or equivalent status. Annual household income varied by race and ethnicity. Looking at an annual household income of $50,000, only 28.1% of white respondents fall below the threshold versus 48.7% of black respondents. 43.5% of Latinx respondents have an annual household income below $50,000 compared to 28.7% of non-Latinx respondents. Chi-square analyses were run to test for associations between race/ethnicity and educational attainment. Latinx individuals

were more likely than non-Latinx individuals not to have attended or completed high school and were more likely to hold an associate degree as their highest education status. Non-Latinx individuals were more likely to hold a bachelor's or graduate degree. Chi-square analysis for ethnicity and education were, χ 2 (N= 2813359, df= 6) = 69779.757, *p=.00.* The effect size for this finding, Cramer's V, was 0.157, showing a substantive association between ethnicity and educational attainment. Data are summarized in Table 2. No substantive associations were found between race and educational attainment. χ 2 (N= 2813359, df= 18) = 50111.978, *p=.00.* The effect size for this finding, Cramer's V, was 0.077.

Table 2

Crosstabulation of Ethnicity and Educational Attainment

Educational Attainment	Ethnicity		
	Not Hispanic, Latino or Spanish	Hispanic, Latino or Spanish	Total
Less than high school	0.4%	2.9%	0.6%
Some high school	1.1%	4.8%	1.5%
High school graduate or equivalent	11.1%	17.6%	11.7%
Some college, degree not received	21.1%	25.4%	21.5%
Associate degree	10.4%	11.2%	10.5%
Bachelor's degree	29.7%	21.6%	29.0%
Graduate degree	26.1%	16.4%	25.3%

χ 2 (N= 2813359, df= 6) = 69779.757, p=.00. Cramer's V=0.157

Chi-square analyses were run to test for associations between race and ethnicity and annual household income. No substantive associations were found between race and

income. χ 2 (N= 2264046, df= 21) = 61321.707, *p=.00.* The effect size for this finding, Cramer's V, was 0.095, just below the threshold for substantive association. Income and ethnicity were found to be associated, with nearly 30% of Latinx respondents reporting an annual household income under $35,000 compared to only 18.1% of non-Latinx respondents. χ 2 (N= 2264046, df= 7) = 22886.430, *p=.00.* The effect size for this finding, Cramer's V, was 0.101, showing a substantive association between ethnicity and household income. Data are summarized in Table 3.

Table 3

Crosstabulation of Ethnicity and Income

	Ethnicity		
Income	Not Hispanic, Latino, or Spanish	Hispanic, Latino, or Spanish	Total
Less than $25,000	9.8%	16.8%	10.4%
$25,000 - $34,999	8.3%	12.9%	8.7%
$35,000 - $49,999	10.6%	13.8%	10.9%
$50,000 - $74,999	17.5%	18.3%	17.6%
$75,000 - $99,999	14.9%	12.8%	14.7%
$100,000 - $149,999	18.8%	13.6%	18.4%
$150,000 - $199,999	9.2%	5.9%	8.9%
$200,000 and above	10.9%	6.1%	10.5%

χ 2 (N= 2264046, df= 7) = 22886.430, *p=.00. Cramer's V=0.101*

Social Determinants of Health

Employment Security

No substantive associations were found between race or ethnicity and economic security measures in this study. Chi-square results for race and employment loss during the pandemic were, χ 2 (N= 2310090, df= 3) = 14960.824, *p=.00.* The effect size for this

finding, Cramer's V, was 0.080. Chi-square results for ethnicity and employment loss were, χ 2 (N= 2310090, df= 1) = 15805.080, *p=.00* with a Cramer's V value of 0.083. Expectation of employment loss in the next two months was not substantively associated with race or ethnicity. Chi-square analysis of race and expected employment loss resulted χ 2 (N= 2729355, df= 3) = 23309.697, *p=.00.* The effect size for this finding, Cramer's V, was 0.092. Ethnicity and expected employment loss analysis resulted, χ 2 (N= 2729355, df= 1) = 22168.452[a], *p=.00.* The effect size for this finding, Cramer's V, was 0.09.

Food Security

Chi-square analyses were run to measure differences between racial and ethnic groups in food security measures. Food security levels, past and present, were significantly associated with ethnicity. Chi-square analysis of ethnicity and prior food security showed significance χ 2 (N= 1774596, df= 3) = 20264.555, *p=.00.* The effect size for this finding, Cramer's V, was 0.107, showing a substantive association between ethnicity and prior food security levels. Findings are summarized in Table 4. Current food security status and ethnicity were associated, χ 2 (N= 2618819, df= 3) = 30657.268, *p=.00.* Cramer's effect size for this finding was 0.108, showing a substantive association between ethnicity and current food security levels. Findings are summarized in Table 4.1.

Associations were not found between race and past or present food security levels. Food security levels prior to March 2020 and race resulted, χ 2 (N= 1774596, df= 9) = 48131.094, *p=.00.* The effect size of this finding, Cramer's V, was 0.095. Chi-

square analysis for race and current food security resulted, χ 2 (N= 2618819, df= 9) = 66064.183, *p=.00.* The effect size for this finding, Cramer's V, was 0.092.

Food security confidence for the following months was substantively associated with both race and ethnicity. Food confidence and race resulted in, χ 2 (N= 1675326, df= 9) = 64473.699, *p=.00.* The effect size for this finding, Cramer's V, was 0.113, showing a low association between race and confidence in being food security during future months. Findings are summarized in Table 4.2. Additionally, food security confidence was significantly associated with ethnicity χ 2 (N= 1675326, df= 3) = 28887.504, *p=.00.* The effect size for this finding, Cramer's V, was 0.131, showing a substantive association between ethnicity and food security confidence. Findings are summarized in Table 4.3.

Table 4

Crosstabulation of Ethnicity and Prior Food Security Levels

Prior Food Security	Ethnicity		
	Not Hispanic, Latino or Spanish	Hispanic, Latino or Spanish	Total
Enough of the kinds of food I/we wanted to eat	78.5%	63.8%	77.2%
Enough, but not always the kinds of food I/we wanted to eat	16.8%	25.2%	17.5%
Sometimes not enough to eat	3.7%	8.8%	4.2%
Often not enough to eat	1.0%	2.2%	1.1%

χ 2 (N= 1774596, df= 3) = 20264.555, p=.00. Cramer's V= 0.107

Table 4.1

Crosstabulation of Ethnicity and Current Food Security Levels

Current Food Security	Ethnicity		
	Not Hispanic, Latino or Spanish	Hispanic, Latino or Spanish	Total
Enough of the kinds of food I/we wanted to eat	71.1%	54.9%	69.7%
Enough, but not always the kinds of food I/we wanted to eat	23.1%	32.6%	23.9%
Sometimes not enough to eat	4.6%	10.1%	5.1%
Often not enough to eat	1.2%	2.4%	1.3%

χ 2 (N= 2618819, df= 3) = 30657.268, p=.00. Cramer's V=0.108

Table 4.2

Crosstabulation of Race and Future Food Security Confidence

Future Food Security Confidence	Race				
	White	Black	Asian	Other or multiple races	Total
Not at all confident	5.0%	13.2%	5.6%	11.6%	6.0%
Somewhat confident	15.1%	31.7%	18.7%	25.5%	17.0%
Moderately confident	18.9%	23.7%	22.1%	23.1%	19.6%
Very confident	61.0%	31.5%	53.6%	39.7%	57.4%

χ 2 (N= 1675326, df= 9) = 64473.699, p=.00. Cramer's V= 0.113

Table 4.3

Crosstabulation of Ethnicity and Future Food Security Confidence

	Ethnicity		
Future Food Security Confidence	Not Hispanic, Latino, or Spanish	Hispanic, Latino, or Spanish	Total
Not at all confident	5.5%	11.3%	6.0%
Somewhat confident	16.1%	26.8%	17.0%
Moderately confident	19.2%	24.6%	19.6%
Very confident	59.2%	37.3%	57.4%

χ 2 (N= 1675326, df= 3) = 28887.504, p=.00. Cramer's V= 0.131

Housing Security

Chi-square analyses were used to measure associations between race and ethnicity in housing security measures. Chi-square analysis for housing type and race resulted, χ 2 (N= 2374917, df= 9) = 64972.801, *p=.00.* The effect size for this finding, Cramer's V, was 0.095, showing no substantive association between race and housing type. Chi-square analysis for housing type and ethnicity resulted, χ 2 (N= 2374917, df= 3) = 23316.463, *p=.00.* The effect size for this finding, Cramer's V, was 0.099, showing no substantive association between ethnicity and housing type.

Whether or not a household was up to date on mortgage payments was significantly associated with race χ 2 (N= 685349, df= 3) = 8577.474[a], *p=.00.* The effect size for this finding, Cramer's V, was 0.112, showing a substantive association between race and current mortgage payment status. Findings are summarized in Table 5. No association was found between mortgage payment status and ethnicity, χ 2 (N= 685349, df= 1) = 2710.416, *p=.00.* The effect size for this finding, Cramer's V, was 0.063.

Whether or not a household was up to date on rent payments was significantly associated with race χ 2 (N= 318191, df= 3) = 6692.350, *p=.00.* The effect size for this finding, Cramer's V, was 0.145, showing a substantive association between race and current rent payment status. Findings are summarized in Table 5.1. Chi-square analysis for rent payment status and ethnicity resulted, χ 2 (N= 318191, df= 1) = 1263.674, *p=<.001.* The effect size for this finding, Cramer's V, was 0.063, showing no association between ethnicity and current rent payment status.

Confidence in the ability to pay upcoming rent or mortgage payments was associated with both race and ethnicity. Chi-square analysis of housing confidence and race resulted, χ 2 (N= 1732008, df= 12) = 62803.662, *p=.00.* The effect size for this finding, Cramer's V, was 0.110, showing a substantive association between race and housing payment confidence. Findings are summarized in Table 5.2. Payment confidence was also associated with ethnicity, χ 2 (N= 1732008, df= 4) = 32559.470, *p=.00.* The effect size for this finding, Cramer's V, was 0.137, showing a substantive association between ethnicity and housing payment confidence. Findings are summarized in Table 5.3.

Table 5

Crosstabulation of Race and Current Mortgage Payment Status

Current on mortgage payments	Race				
	White	Black	Asian	Other or multiple races	Total
Yes	94.5%	85.2%	86.8%	89.2%	93.4%
No	5.5%	14.8%	13.2%	10.8%	6.6%

χ 2 (N= 685349, df= 3) = 8577.474[a], p=.00. Cramer's V= 0.112

Table 5.1

Crosstabulation of Race and Current Rent Payment Status

	Race				
Current on rent payments	White	Black	Asian	Other or multiple races	Total
Yes	90.3%	77.2%	82.4%	82.4%	87.6%
No	9.7%	22.8%	17.6%	17.6%	12.4%

χ 2 (N= 318191, df= 3) = 6692.350, p=.00. Cramer's V= 0.145

Table 5.2

Crosstabulation of Race and Confidence in Future Housing Payments

	Race				
Confidence in paying future housing payments	White	Black	Asian	Other or multiple races	Total
No confidence	3.9%	10.6%	5.2%	8.6%	4.8%
Slight confidence	6.5%	16.9%	10.3%	13.1%	7.9%
Moderate confidence	15.8%	24.5%	20.9%	22.5%	17.1%
High confidence	72.3%	45.9%	61.9%	54.1%	68.7%
Payment is/will be deferred	1.4%	2.1%	1.7%	1.8%	1.5%

χ 2 (N= 1732008, df= 12) = 62803.662, p=.00. Cramer's V= 0.110

Table 5.3

Crosstabulation of Ethnicity and Confidence in Future Housing Payments

Confidence in paying future housing payments	Ethnicity		Total
	Not Hispanic, Latino, or Spanish	Hispanic, Latino, or Spanish	
No confidence	4.3%	9.2%	4.8%
Slight confidence	7.1%	15.2%	7.9%
Moderate confidence	16.5%	23.5%	17.1%
High confidence	70.6%	50.4%	68.7%
Payment is/will be deferred	1.5%	1.7%	1.5%

χ 2 (N= 1732008, df= 4) = 32559.470, p=.00. Cramer's V= 0.137

Access to Health Care

No substantive associations were found between racial and ethnic groups in health care access measures. Chi-square analysis for private health care coverage and race resulted, χ 2 (N= 1385664, df= 3) = 6609.267, *p=.00.* The effect size for this finding, Cramer's V, was 0.069. Private health care coverage and ethnicity resulted, χ 2 (N= 1385664, df= 1) = 4471.169, *p=.00.* The effect size for this finding, Cramer's V, was 0.057, showing no association between ethnicity and private health care coverage. Public health care coverage and race resulted, χ 2 (N= 1318201, df= 3) = 5492.809, *p=.00.* The effect size for this finding, Cramer's V, was 0.065, showing no association between race and public health care coverage. Public health care coverage and ethnicity analysis resulted, χ 2 (N= 1318201, df=1) = 1857.792, *p=.00.* The effect size for this finding, Cramer's V, was 0.038, showing no association between ethnicity and private health care coverage.

No substantive associations were found between deferring needed mental health services and race or ethnicity. Chi-square analysis for deferring mental health services and race resulted, χ 2 (N= 2344060, df= 3) = 6261.254, *p=.00.* The effect size for this finding, Cramer's V, was 0.052, showing no association. Chi-square analysis for deferred mental health services and ethnicity resulted, χ 2 (N= 1318201, df= 1) = 1308.907, *p=<.001.* The effect size for this finding, Cramer's V, was 0.024, showing no association between ethnicity and deferring mental health services during the pandemic.

Health

No health measures were substantively associated with race or ethnicity. Health status and race chi-square analysis resulted, χ 2 (N= 1654338, df= 12) = 20680.893, *p=.00.* The effect size for this finding, Cramer's V, was 0.065, showing no association between race and health status. Health status and ethnicity resulted, χ 2 (N= 1654338, df= 4) = 5262.535, *p=.00.* The effect size for this finding, Cramer's V, was 0.056, showing no association between ethnicity and self-reported health status.

COVID-19 diagnoses were not substantively associated with race or ethnicity. Chi-square analysis for COVID-19 diagnosis and race resulted, χ 2 (N= 942424, df= 6) = 2412.668, *p=.00.* The effect size for this finding, Cramer's V, was 0.036, showing no substantive association between race and COVID-19 diagnosis. Results for COVID-19 diagnosis and ethnicity found, χ 2 (N= 942424, df= 2) = 4857.439, *p=.00.* The effect size for this finding, Cramer's V, was 0.072, showing no association between ethnicity and COVID-19 diagnosis.

CHAPTER V

DISCUSSION AND IMPLICATIONS

The purpose of this study was to understand associations between racial and ethnic groups and pandemic outcomes related to social determinants of health and overall health status measures in the United States during the first fifteen months of the COVID-19 pandemic. This study placed particular focus on economic security through employment, food security, housing security, access to healthcare, self-reported health status, and COVID-19 diagnosis for black and Latinx Americans. Based on study findings, certain social determinants of health are substantively associated with reporting black or Latinx as one's race or ethnicity, but results did not fully support all research hypotheses proposed in this study. Due to the large sample size used, all chi-square analyses run were significant. To test for true associations between race and ethnicity and study variables, Cramer's V tests were run to measure effect size and strength of associations.

Social Determinants of Health

Employment Security

Employment security was used as a measure of economic security for this study. While the chi-square analyses were significant due to sample size, follow-up Cramer's V tests did not find associations between race and ethnicity and employment loss since

March 2020 or expected employment loss. The crosstabulation percentages do show stark differences between racial and ethnic groups with 48.3% of black respondents reporting employment loss since March 2020, compared to 37.4% of white respondents and an average of 39% for all races. 51.9% of Latinx respondents reported employment loss during the pandemic compared to 37.9% of non-Latinx respondents. Black and Latinx respondents expected future employment loss at a rate of 30.2% and 33% respectively, compared to 19.6% and 20.1% for white and non-Latinx respondents.

The study hypothesis stating black and Latinx Americans experienced disproportionate employment loss was not supported based upon non-substantive chi-square and Cramer's V results. One explanation for this unexpected finding may be the vast timeframe from which HPS employment data was analyzed. The current study used HPS employment data collected consecutively from April 2020 through August 2021, which missed the initial unemployment peak for all Americans that occurred in March 2020. Data from the Bureau of Labor Statistics shows that black and Latinx populations suffered both from higher peaks of unemployment in March 2020, and longer lags in the return to lower unemployment levels when compared to white and non-Latinx populations (Falk et al., 2021). Analyses may be more sensitive to disparities in employment over shorter periods, such as peaks of the COVID-19 pandemic, in between stimulus payments, and during periods when businesses experienced mandated closures. While the study hypothesis was not founded, the crosstabulations from this study are comparable with the U.S. Bureau of Labor Statistics recently released a report showing disproportionate effects on employment rates for people of color throughout the COVID-19 pandemic (U.S. Department of Labor Statistics, 2021). Additional analyses are

necessary to identify when black and Latinx Americans were most vulnerable to COVID-19 related unemployment and how that vulnerability may have interacted with other disparate outcomes.

Food Security

Chi-square analyses for food security measures: food security before March 2020, current food security, and confidence in remaining food secure were significantly associated with race and ethnicity due to the large sample size. Cramer's V tests showed a substantive association between race and confidence in remaining food secure, and a substantive association between ethnicity and all three measures.

While the racial and ethnic disparities in food insecurity levels are vast, actual increases throughout the pandemic were seen primarily in Latinx populations. Food insecurity levels prior to March 2020 were 4% and 14.8% for white and black respondents respectively. 11% of Latinx respondents reported prior food insecurity compared to 4.7% of non-Latinx respondents. Overall, Latinx saw the highest increase, at 1.5%, when comparing prior and current food security levels followed by white respondents at 1.2%, non-Latinx at 1.1%, and black respondents at 0.7%. Black Americans continue to face the highest rates of food insecurity across racial and ethnic lines, following historical trends (Feeding America, 2020). Follow-up Cramer's V tests showed a substantive association between confidence in remaining food secure and both race and ethnicity. Black and Latinx respondents were more than twice as likely as white and non-Latinx respondents to report 'no confidence' in being able to obtain necessary food for their household for the next four weeks. These findings support the hypothesis

that black and Latinx faced disproportionate levels of food insecurity during the COVID-19 pandemic, with Latinx Americans being most disproportionately affected.

Housing Security

While chi-square analyses for all housing measures were significant due to sample size, follow up Cramer's V tests only found substantive associations between race and current mortgage payment status, current rent payment status, and confidence in paying the next housing payment on time. Ethnicity was meaningfully associated with housing payment confidence. Housing type was not found to be associated with race or ethnicity; however black households are more than twice as likely as white households to rent their home. Black homeowners, at a rate of 14.8%, were behind on mortgage payments compared to only 5.5% of white homeowners. Similarly, 22.8% of black renters were behind on payments compared to 9.7% of white renters. Confidence in making housing payment for the following month was associated with both race and ethnicity. Black (10.6%) and Latinx (9.2%) respondents were more than twice as likely as white (3.9%) and non-Latinx (4.3%) respondents to report no confidence in making their upcoming housing payment on time.

Gaps in housing security have been widened by the COVID-19 pandemic, especially between black and white Americans. With low-income housing predominately occupied by black families, these households faced increased vulnerability to pandemic effects. While renters were shown to face greater difficulty in housing security throughout the pandemic, black homeowners also struggled disproportionately compared to white homeowners suggesting reduced protection of homeownership for black Americans. Both black and Latinx populations are still recovering from the economic

crisis of 2008 (Center for American Progress, 2019), which left them especially vulnerable to housing insecurity throughout the pandemic. Results from this study support the hypothesis that black and Latinx populations experienced disproportionate rates of housing insecurity throughout the COVID-19 pandemic compared to white and non-Latinx populations.

Access to Healthcare

While chi-square analyses for all healthcare access measures were significant due to sample size, follow-up Cramer's V test showed no association between racial and ethnic status and access to healthcare measures. While non-Latinx were more likely than Latinx respondents to have any form of healthcare coverage, black respondents were more likely to have public health insurance than white respondents. Both Latinx and black respondents were more likely than their white and non-Latinx counterparts to have deferred needed mental health services, however, neither race nor ethnicity was found to be substantively associated with deferred mental health care.

Recent literature found time-sensitive healthcare disparities throughout the duration of the COVID-19 pandemic. The Robert Wood Johnson Foundation found that 36% of nonelderly adults delayed or forwent at least one type of healthcare in September 2020, with black and impoverished Americans reporting the highest rates of delayed and forgone care (Greene & McCargo, 2021). Additionally, this study measured the impact of delayed and forgone healthcare for these individuals finding delayed healthcare significantly limited the ability to work, worsened other health conditions, and limited the ability to do daily activities. These findings speak to the co-occurring nature of social determinants of health and detail how disparate vulnerabilities in one area can lead to

vulnerabilities in other areas. While results from this study support the null hypothesis that access to healthcare was similar across racial and ethnic lines throughout the COVID-19 pandemic, additional research is needed to truly identify which populations were most greatly impacted by reductions in healthcare access, deferred health services, and COVID-19 illness, and how these experiences relate to disparities we have seen in COVID-19 morbidity and mortality.

Health: Health Status and COVID-19 Diagnoses

While chi-square analyses were significant for all health status measures due to sample size, follow-up Cramer's V tests showed no meaningful association between race and ethnicity and health status variables. While black and Latinx respondents were less likely than their white and non-Latinx counterparts to report 'very good' or 'excellent' health status, these differences were not significantly associated with race or ethnicity. 13.5% of black respondents reported having had been diagnosed with COVID-19 compared to 11.2% of white respondents, while 17.7% of Latinx respondents reported COVID-19 diagnoses compared to only 10.6% of non-Latinx respondents.

Trend data published by the Kaiser Family Foundation show three specific peaks of COVID-19 diagnoses with black and Latinx populations reporting significantly higher rates of illness between June 2020 and September of 2021 (Artiga et al., 2021). These time-sensitive disparities in COVID-19 illness led to greater COVID-19 mortality rates due to increased pre-existing health conditions, poorer access to healthcare and various other social and economic vulnerabilities people of color often face disproportionately compared to white and non-Latinx Americans. Between these peaks, we see lulls where these racial and ethnic gaps are insignificant. Because this study looked at COVID-19

diagnoses confirmed by a doctor, from April 2020 to July 2021, the time-sensitive disparities were not identified by our analysis. There is also a geographical argument regarding partisan identification and COVID-19 health measures, with the majority of black and Latinx Americans identifying as democratic, which is shown to be associated with COVID-19 vaccination status (Kates et al., 2021). Being fully vaccinated is the greatest protection available against contracting COVID-19 and could be a contributing factor to the reduction of disparate COVID-19 diagnoses seen later in the pandemic. While the results of this study do not support the hypothesis that black and Latinx Americans experienced poorer health than white and non-Latinx Americans during the COVID-19 pandemic, additional research is needed to understand which populations were impacted at pivotal periods throughout the pandemic and how these health measures influenced disparities in COVID-19 outcomes.

Limitations

This study is not without limitations. Using Household Pulse Survey data to measure overall social, economic, and health effects across the duration of the COVID-19 pandemic may result in time-sensitive disparity patterns being overlooked and unaddressed. Secondly, due to the co-occurring nature of disadvantages, we must acknowledge that in utilizing data from an internet-based survey, this nationally representative sample likely excludes respondents without internet access, who are often most vulnerable. In 2021, the U.S. Department of Health and Human Services found that 16.6% of people living in poverty had no internet access in 2019. Of those, black, Latinx, and American Indians and Alaskan Natives were least likely to have internet access (Swenson & Ghertner, 2021). This is particularly important since this study looks at

black and Latinx populations specifically. Thirdly, the Household Pulse Survey is a household-level measure. Some of the variables used in this study, such as employment loss, ask about household impact, therefore we are unable to determine which or how many household members lost employment during the pandemic.

Implications

Results of this study support the hypothesis that black and Latinx populations have experienced disparities in social determinants of health throughout the COVID-19 pandemic, thus widening historical gaps in social and economic disparities present long before the onset of the current health crisis. While racial and ethnic disparities in overall health status and COVID-19 diagnoses were not found in the current study, we know that the disproportionate increases we have seen in various social determinants of health drive disparities in health and wellbeing. Therefore, this research proposes health status alone does not justify the inequities in COVID-19 morbidity and mortality. Instead, we must look at historical disparities in social determinants of health as leading drivers of the inequitable COVID-19 outcomes for populations of color. Generations of intensifying and intersecting disadvantages including poor structural environments, high rates of generational poverty, discrimination, structural racism, racial capitalism, and reduced access, have left populations of color increasingly vulnerable and less resilient in facing the global pandemic, even more so than poor health status (Gravlee, 2020; Pirtle, 2020; Tan et al., 2021). Disparities in food security, housing security, and economic security often intersect and lead to more severe and co-occurring disadvantages for people of color that can significantly influence overall health and well-being for generations to come (Goldman et al., 2020).

One of the most perplexing findings from the current study is how various social determinants of health were impacted differently between the two focus populations for this study. Black households faced greater housing insecurity while Latinx households faced greater challenges related to food security. These findings suggest the need for increased attention on how different social determinants of health influence and impact various marginalized populations differently rather than placing the focus on populations of color in general.

Understanding how these social determinants influence one another and thus impact health outcomes is essential in identifying ways to reduce disparities in social determinants of health and promote a more equitable society. The COVID-19 pandemic has highlighted disparities in health outcomes, but it is the root cause of these disparities we must combat. Systemic and structural inequities have been embedded in society for centuries, creating barriers that cause populations of color to be disadvantaged from the start (Artiga, 2020; Braveman et al., 2011; Gee & Ford, 2015). To truly achieve health equity, we must fight these inequities at their origins by removing the systems in place that amplify experiences and opportunities for some while hindering them for our neighbors of color.

Future Directions

Despite the limitations, the current study has implications for social scientists, community organizers, health professionals, and political action committees. This research lays a foundation for identifying escalating racial and ethnic disparities throughout the course of the COVID-19 pandemic. To address a societal issue, we must first recognize its implications. Ongoing research is necessary to truly understand the full

impact of the pandemic on people of color and other marginalized groups. Additionally, it is not sufficient to measure how societal and systemic influences impact single-measure outcomes. Due to the co-occurring nature of disparities and disadvantages, researchers and health professionals must work to conceptualize broader impacts of co-occurring disparities and identify ways in which black and Latinx Americans can build resilience against them. By identifying the full impact of COVID-19 on various American populations, we can begin actively working to reduce barriers, increase opportunities and access, and move towards a healthier and more equitable society.

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VITA

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