THE EFFECTS SOCIAL STRUCTURES HAVE ON COVID-19 OUTCOMES AMONG THREE STATES IN THE UNITED STATES.

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

DEPARTMENT OF SOCIAL SCIENCES AND HISTORICAL STUDIES

COLLEGE OF ARTS AND SCIENCES

BY

JESSICA L. ADAME B.A., M.A.

DENTON, TEXAS

DECEMBER 2021

DEDICATION

I would like to dedicate this dissertation to my family, who have pushed me to reach this level of success for the entire family. My dad, who has always taught me that I am as great as I choose to be, and my daughter, Jesslyn, who has seen this journey through from the very beginning and has dealt with the long days and nights. I hope I made you proud.

ACKNOWLEDGMENTS

This dissertation would not have been possible without the guidance and support from my committee members, Dr. Lo, Dr. Williams, and Dr. Bones. My mentor, Dr. Lo, who has graciously taught me both good research and great work ethic, the patience of my family, and the grace of God.

ABSTRACT

JESSICA L. ADAME

THE EFFECTS SOCIAL STRUCTURES HAVE ON COVID-19 OUTCOMES AMONG THREE STATES IN THE UNITED STATES.

DECEMBER 2021

This study aimed at examining the effects social structures have on COVID-19 outcomes. Since the emergence of the COVID-19 virus in late 2019, there has been an ongoing increase of confirmed cases and deaths worldwide. Past literature on structural factors and health have concluded that select communities target health disparities. However, because this virus is so recent, and continues to unravel itself. This dissertation empirically analyzes the effects social structures have on COVID-19 outcomes by examining counties within three states in the United States to understand better health disparities related to COVID-19, particularly from a macro-level perspective. The three states in this discussion are California, Texas, and New York. Specifically, this dissertation presents three hypotheses.

Generalized least square regression techniques were utilized to assess the hypotheses. Results indicate that overall, county population size, county racial composition, percentage of married households, occupation, total percentage of citizenship, and disadvantage are all significant predictors of rates of COVID-19 confirmed cases. The overall unemployment rate, county population size, racial composition, occupation, and the total percentage of citizenship were significant

predictors of COVID-19 death rates. When examining each state individually, I found unique results on whether and how social structural factors affect each outcome. Findings from this study can contribute to the awareness and literature on health disparities and ultimately lead to policy implications that could alleviate these disparities.

TABLE OF CONTENTS

Page

LIST OF TABLES

Table Page

CHAPTER I

INTRODUCTION

The COVID-19 infection first emerged in China in December of 2019. The rate of those infected grew rapidly and quickly doubled by the beginning of 2020. According to the Centers for Disease Control and Prevention (CDC 2021), since January 2020, there has been an estimated total of more than 30 million confirmed cases in the United States. Moreover, as of July 2021, there have reportedly been over 600,000 confirmed deaths in the United States (WHO 2021b). The demographics of those infected and those who have resulted in death have recently been discussed as leading influences to the outcomes of this health pandemic (Alcendor 2020). Structural inequalities have magnified ethnic, racial, and income disparities throughout COVID-19 (Raifman and Raifman 2020; Templeton 2020).

Despite the increase in the awareness of this matter (Chowkwanyun and Reed 2020; Egede 2006; Louis-Jean et al. 2020; Shah, Sachdeva, and Dodiuk-Gad 2020), there continues to be a lack of resources within specific communities, increasing poor COVID-19 outcomes (Hooper, Napoles, and Peréz-Stable 2020; Louis-Jean et al. 2020). Serious health issues, including diabetes, tuberculosis, and cancer, have provided similar outcomes, such as death, within minority communities as COVID-19 is currently presenting (Alcendor 2020; Egede 2006; McBean et al 2004). Results of a recent study stated that structural inequalities in the United States continue to be a significant factor in

the health outcomes among low-income communities. In cities like Chicago, it was found that while African Americans made up 30 percent of the population, they accounted for 50 percent of COVID-19 cases and approximately 70 percent of reported deaths related to COVID-19 (Alcendor 2020). New York City had the largest number of COVID-19 cases as well as deaths. African Americans make up 22 percent of the population in New York City, yet they accounted for 28 percent of COVID-19 deaths (Alcendor 2020). Like African Americans, Hispanics/Latinos make up 29 percent of the New York City population, yet they accounted for 34 percent of deaths (Alcendor 2020). Altogether, when examining counties considered to be predominantly African Americans and Hispanics/Latinos, there was a COVID-19 infection rate of 137.5 per 100,000 and a death rate of 6.3 per 100,000, which was six times higher than predominantly white counties (Alcendor 2020). The health disparities faced by these communities are argued to be partly due to the differences in the social structures, including poor living conditions, living in densely populated neighborhoods of lower socioeconomic status, less likely to have access to health care, and lower rates of COVID-19 testing (Seldon and Berdahl 2020; Wertheim et al. 2013). As there are numerous assumptions as to the reasoning behind these issues, preliminary evaluations have suggested that the effects of COVID-19 on minorities, particularly African Americans, are partly due to preexisting health conditions that are most prominent among minorities (Bertocchi and Dimico 2020). However, studies have indicated that the effects may derive from the lack of necessary

resources that this community is faced with (Alcendor 2020; Bertocchi and Dimico 2020).

Gross et al. (2020) found that mortality rates due to contracting COVID-19 are higher for ethnic or racial minorities than whites. Specifically, African Americans have nearly triple the COVID-19 death rates compared to whites, and Hispanics death rates are almost double that of whites when age is considered. The urgency to address the racial issues regarding health disparities and data that accounts for the disparities among these communities remains vital (Bertocchi and Dimico 2020). In addition, structural inequalities are an imperative factor that influences minority communities to be exposed to viruses such as COVID-19 (Bentley 2020; Zhan et al. 2020). While this pandemic is ongoing, the issue regarding health disparities among oppressed communities has presented itself once more during the current health pandemic, making it a national concern that requires immediate attention to implement practical solutions (Alcendor 2020; Pan et al. 2020).

Using five separate data sources: 1) The U.S. Census Bureau (2021b), 2) The New York State Health Data (2021), 3) The California Open Data Portal (2020), 4) The Texas Department of State and Health Services (2020), and 5) The U.S. Bureau of Labor Statistics (2021), this longitudinal study aims to examine the effects that social structural factors have on COVID-19 positive cases as well as confirmed deaths among three different states in the United States; California, Texas, and New York, and their counties during the months' March 2020 to April 2021. Recently, there has been continuous

discussion regarding the disproportionate impact that COVID-19 has had on minority communities since the beginning of the historical pandemic in the United States (Kendi 2020). This study uses two outcomes to measure the impact of COVID-19; the number of confirmed monthly positive cases and the number of confirmed monthly deaths in all different counties located in the state of New York, the state of Texas, and the state of California throughout beginning from March 2020 until April 2021. In addition, the study examines whether and how the state may play a moderating role in COVID-19 outcomes' associations with these social structural factors throughout the pandemic.

RESEARCH PROBLEM

This study is guided by three main research questions contributing to Fundamental Cause Theory and Social Disorganization Theory literature. First, how do structural factors on the county-level influence, if at all, COVID-19 confirmed cases among three states, each in distinct geographic regions? Secondly, how do structural factors on the county-level impact, if at all, COVID-19 deaths among three states in the United States, each being located in distinct geographic regions from each other? Both of which are examined from March 2020 through April 2021. Third, does the state play a moderating role in social structures and COVID-19 health outcomes?

SIGNIFICANCE OF STUDY

This study aims to examine the impact of social structural factors on the current COVID-19 infections. While this virus is relatively new, it has claimed the lives of many individuals throughout its existence. Past literature has frequently identified health

disparities as a consistent issue that needs addressing (Hicken, Kravitz-Wirtz, Durkee, and Jackson 2018; Neagu et al. 2017). Yet, the current health concerns facing the country and the world provide a new realm that must be examined to quantify the risks low socioeconomic (SES) communities face and possibly allocate resources to identify, prevent, and develop solutions for reducing health disparities.

There are three significant contributions of my study. First, this study provides empirical quantitative analysis on the effects of social structural factors on COVID-19 outcomes. The outcomes of this study are both positive COVID-19 confirmed cases as well as confirmed deaths due to COVID-19 infection. Examining deaths as their own outcome contributes significantly to the literature on health disparities, precisely one that is currently developing. This dissertation contributes to the literature through its advanced statistical analysis, Generalized Least Square Regression, to explain COVID-19 outcomes over time. This study closely examines the effects of COVID-19 overtime by using three time-varying variables; confirmed cases, deaths, and unemployment, to get a better depiction of the outcomes of this infectious disease as it develops on a month-to-month basis, rather than just examining the overall outcome at one point in time, as other health matters within this realm of literature have done in the past. Thus, I took into account the changes that this pandemic has caused since March 2020 in a longitudinal analysis.

Second, I examined COVID-19 confirmed deaths among counties of three largely populated states in the United States, California, Texas, and New York, and the effects

structural factors have had on COVID-19 outcomes, providing a macro-level perspective to the current issue on health disparities. Third, uniquely, this study was guided by two theoretical perspectives: One most commonly established in medical sociology—Fundamental Cause Theory (Masters, Link, and Phelan 2015; Rubin, Clouston and Link 2014), and another macro-level theoretical perspective that has been more widely used to explain structural factors and crime—Social Disorganization Theory. Fundamental Cause Theory has been cited in the literature frequently regarding social structure inequalities and health occurring throughout history. The recent COVID-19 pandemic magnifies structural inequalities and their negative impacts on the disadvantaged populations in a much shorter period of time. COVID-19, in this case, replaces the chronic illnesses such as cancer, tuberculosis, diabetes, and several other long-term health issues that literature has discussed in the past as it pertains to health disparities (Masters et al. 2015; Phelan, Link, and Tehranifar 2010).

On the contrary, Social Disorganization is most known for its use in understanding concentrated crime among neighborhoods due to structural factors (Sampson and Groves 1989). This study used two theoretical frameworks to indicate that similar structures used to explain both health and crime, individually, can be applied to the current health pandemic. The present virus has occurred and will last within a short period of time but has brought health problems on a more intense scale. My study provides insight into modern-day health disparities, as it examines the current health pandemic and the ways by which structural inequalities impact counties differently.

CHAPTER II

THEORETICAL FRAMEWORK

This chapter aims to synthesize an explanation for the increased spread of COVID-19 confirmed cases and fatalities within concentrated areas to provide an understanding of the effects social structures may have on the current pandemic. This contribution will be made through the use of two theoretical perspectives: Fundamental Cause Theory and Social Disorganization Theory. The two theoretical frameworks discussed are linked through the usage of collective efficacy and the many ways by which information is disseminated on the societal level, thus, influencing health outcomes on the county level when it comes to COVID-19.

FUNDAMENTAL CAUSE THEORY

The theory of fundamental cause was first discussed in Lieberson's (1985) basic causes, which underlined the association between SES and mortality (House et al. 1990, Lieberson 1985; Phelan et al. 2004; Phelan et al. 2010). In the health literature, it is often stated that the poor and less privileged individuals face worse health, thus dying at faster rates than those who are wealthy and more privileged (Link and Phelan 1995).

In 1995, Link and Phelan further developed Lieberson's theory of basic causes by suggesting that SES is a fundamental determinant of mortality disparities by linking social conditions to health, eventually referring to this framework as Fundamental Cause Theory. In essence, Link and Phelan (1995) argued that despite radical changes in social

conditions and medical technology, mortality among select groups is more or less prevalent due to a lack of resources. According to Link and Phelan (1995), there are four components to the Fundamental Cause Theory: First, it can be applied to any medical outcome. In other words, it is not limited to a specific medical disease. Regardless of the health condition, when faced with a medical illness, your health and other conditions of the disease may depend on your SES (Phelan and Link 2013) Secondly, it affects medical conditions through several different risk factors. Such factors include knowledge of health-related factors (e.g., exercise, proper diet, and tobacco usage), psychological factors, and social support (Gao et al. 2007; Masters et al. 2015; Mirowsky and Ross 2015; Phelan et al. 2004). Third, fundamental social causes include having limited adequate access to resources that may otherwise allow prevention of risk factors and/or minimize consequences of the disease once it occurs (Phelan and Link 2005; Phelan and Link 2013). Fourth, the close association between fundamental cause and health is reproduced over time by replacing intervening mechanisms (Phelan and Link 2005; Phelan and Link 2013). Together, each component within Fundamental Cause Theory argues that there are dynamic social processes that are continuously shaping the ongoing relationship between SES and health outcomes (Freese and Lutfey 2011; Link and Phelan 2010; Phelan and Link 2013)

Fundamental Cause and Health

The issue of inequalities regarding health within marginalized groups is not a recent one, rather a persistent one that has presented itself in countless fatal infectious

diseases such as measles, typhoid fever, tuberculosis, and many others throughout history (Cockerham 2017; Phelan, Link and Dovidio 2008). According to Fundamental Cause Theory, the main reason as to why SES is closely associated with poor disease outcomes is due partly to the deployed resources that certain classes may or may not have access to that could avoid risk and even allow for the adoption of protective strategies (Phelan and Link 2005). Such resources include financial capital, knowledge, power, prestige, and beneficial social standing (Rydland, Solheim, and Eikemo 2020). These resources operate on both individual and contextual levels. When discussing the individual level, this pertains to the "causes of causes" or "risks of risk" that may influence whether or not people are aware, can afford, have access to, and even receive social support for their efforts to partake in health-protective and enhancing behaviors (Mackenbach et al. 2015; Phelan and Link 2005; Rydland et al. 2020). Link and Phelan (2010) argue that individuals are at "risks of risks" when they do not have access to resources to practice good health that promotes health benefits.

In a larger context, those who have the financial resources are able to position themselves to be more accessible to practice better health; this is done by utilizing SES resources, such as locating in advantageous neighborhoods (Link and Phelan 2010). Communities sustain resources as a collective by having access to the best health care facilities, playgrounds, parks, and food markets nearby, much of which Phelan and Link argued to be the "risk of risk" that disadvantaged neighborhoods often lacked (Phelan and Link 2005). A similar concept of collectivism within communities can be found when

examining crime (Kotlaja 2020). Because crime can be viewed on a macro-scale, it is visible to recognize the disadvantages of communities and how their lack of resources affects the community makeup (Kotlaja 2020). In higher SES communities, neighbors collectively exert substantial clout to ensure that noise, crime, violence, pollution, and even traffic are kept at a minimum, thus affecting the community as a whole; this is referred to as collective efficacy (Kotlaja 2020).

Similarly, among every historical health matter throughout history, there has been an abrupt number of deaths among specific communities that are fueled by overcrowding and poor sanitation in low SES homes and communities as well as the lack of necessary resources that other communities may be equipped with (Phelan and Link 2013; Polonijo and Carpiano 2103). This disadvantageous component is what Phelan and Link argued to be the "causes of causes" (Link and Phelan 2010). Recent literature has pointed to the effects of neighborhood-level SES conditions on health outcomes (Root 2012). Observable differences in health outcomes among distinct neighborhoods have suggested that it may be partly due to physical or social environments that may result in health inequalities (Diez Roux and Mair 2010). This includes the quality of social spaces that affect the nature of social interactions (Diez Roux and Mair 2010). Since social capital mediates the relationship between inequality and health status, the literature indicates increases in poor health outcomes are commonly found in low SES areas where there is a decrease of health resources accessible to the community (Veenstra 2000). Link and Phelan (1995) argued that money, knowledge, prestige, power, and social connections are

resources embedded in the variables that I recognize as imperative factors to health, such as SES, social networks, ethnicity, and gender.

The term " health disparities" refers to preventable differences in the burden of health and disease, injury, violence, or opportunities to achieve optimal health experienced by socially disadvantaged populations (CDC 2021). Specifically, such populations can be defined by social factors such as race or ethnicity, education or income, gender, disability, sexual orientation, and/or geographic location (e.g., rural or urban; CDC 2021). Health disparities are inequitable and may be directly related to historical and/or current unequal distribution of social, economic, environmental, and political resources (Braveman et al., 2011; Masters, Link, and Phelan 2015).

Much literature has focused on the health disparities that accompany SES and health (Stormacq, Van den Brouke, and Wosinski 2019). As stated in the literature, SES disparities are among the most fundamental causes of health disparities (Stormacq et al. 2019). Because SES is frequently linked to a wide range of health outcomes and lifestyles that influence health, levels of education, income, and/or occupation are commonly discussed in the literature to be the most fundamental causes of health disparities (Adler and Newman 2002; Stormacq et al. 2019). However, it is argued that SES plays more of a proxy for other determinants that influence health (Braveman et al. 2011). Specifically, health literacy, and the lack thereof, result in health disparities within low SES communities (Stormacq et al. 2019).

Moreover, the lack of health literacy influences other components that promote better health (Stormacq et al. 2019). For example, according to Chen, Martin, and Matthews (2006), children who live in low SES communities are less likely to get vaccinated and suffer from consequences because of it. According to the literature, lower SES is associated with lower life expectancy (Phelan and Link 2013), higher overall mortality rates, and higher rates of infant and perinatal mortality (Link and Phelan 2010). Lower SES communities are challenged with a lack of resources that yield health promotion (Upshaw et al. 2020).

Fundamental Cause Theory suggests that SES is closely related to several disease outcomes through the possible prevention of health outcomes by deploying resources that could otherwise avoid risk and adopt protective strategies (Freese and Lutfey 2011). Consequently, SES affects health regardless of the profile of the medical matter. For example, a healthy lifestyle promotes better health outcomes; however, healthier habits are possible (Masters et al. 2015). Health inequalities have persisted and are fueled by risk factors such as poor diet, smoking, and inadequate exercise, which are more common within low-income communities. These poor health habits that are commonly assessed within marginalized groups, can be traced back to the lack of resources that promote better health habits such as natural grocers, accessible/affordable health care providers within the community, more green spaces such as parks, and an increase in the use of public transportation, that may hinder positive health practices (Vega, Rodriguez, and Gruskin 2009). Freese and Lutfey (2011) discussed “habitus” when discussing

Fundamental Cause Theory. According to Freese and Lutfey (2011), certain classes have different norms, lifestyles, and dispositions that may benefit health. This perspective was first presented by Bourdieu (1987) when it was found that French working-class individuals preferred foods that were nutritious yet cheap, while professionals preferred a diet that was more healthy, light, and low on calories. Lifestyle practices, as discussed by Bourdieu, are clustered in groups and therefore reflect on class, age, and gender (Cockerham 2013). According to the literature, higher SES communities are equipped with better grocers nearby that provide for healthier food choices as well as are more likely to be surrounded by green spaces that promote healthy lifestyles (Pearce et al. 2007; Vega et al. 2009; Zhang and Tan 2019). Much literature has discussed green spaces as mediating factors for the promotion of health, commonly found in higher SES communities (Amano, Butt, and Peh 2018; Shin, Kwan, and Grigsby-Toussaint 2020; Zhang and Tan 2019). Additionally, studies have found that green spaces within neighborhoods are likely to provide a more stress-free environment, provide a more welcoming atmosphere, and even influence crime rates (Amano et al. 2018; Schusler et al. 2018).

Moreover, educational attainment maintains an imperative factor to health disparities (Masters et al. 2015). The CDC (2021) indicates that health disparities are closely related to inequities in education. Expressly, dropping out of school is associated with multiple social and health problems (Gupta 2006). Overall, much of this literature states that less education is associated with an increased likelihood of experiencing

obesity, substance abuse, and unintentional and intentional injury than individuals with more education (Gupta 2006). According to Phelan and Link (2005), adjusted mortality rates among men and women are much higher for those with less than 12 years of education. Masters et al. (2015) argued that the size of education gradient maintains a significant gap among classes, racial groups, and gender. Research continues to document persisting differences in educational attainment, health outcomes, and longevity. Masters et al. (2015) indicated an emergence in educational attainment and smoking rates related to smoking-lung cancer.

Moreover, according to Link and Phelan's (2010) research, education plays a mediating role due to its close relationship to lifestyle factors and access to adequate health care. In addition, race and ethnicity maintain a pivotal factor in health inequalities. In a race-conscious society, ethnic health disparities arise on three distinct levels: 1) differences in social, political, economic, or environmental exposures, which in turn, result in differences in disease exposure (American Public Health Association 2001; 2) differences in access to healthcare; 3) differences in quality care received within the health care system (American Public Health Association 2001). According to Phelan, Link, and Dovidio (2008), Fundamental Cause Theory is not limited to any specific medical disease; thus, literature regarding mental health issues has pointed to the differences in health regarding race and ethnicity (Roxburgh 2009).

SOCIAL DISORGANIZATION THEORY

Social Disorganization Theory first emerged in 1942 by Clifford Shaw and Henry McKay to better understand the residential locations of juvenile delinquents referred to the Chicago courts (Sampson and Groves 1989). Upon their research, it was found that crime rates were not evenly dispersed across time and space (Sampson and Groves 1989). Instead, high crime volume was discovered to be concentrated in particular areas of the city and remained relatively stable throughout different regions regardless of the population changes within time (Sampson and Groves 1989). These observations led theorists Shaw and McKay to conclude that crime was likely a function of neighborhood dynamics and not so much the function of the individuals living within the neighborhoods, thus theorizing that neighborhood ecological conditions shape crime rates (Kubrin and Weitzer 2003; Kubrin and Bauhofer 2009). According to the theory, residential mobility, poverty, ethnic heterogeneity, and weak social networks decrease a neighborhood's ability to control crime (Kubrin and Weitzer 2003). Unlike most theories that are mostly centered on examining “kinds of people” as an explanation for crime, Social Disorganization Theory focuses on the effects of the structure of places, including different types of neighborhoods and other dynamics within these institutions (Kowitt et al. 2018). This theory argues that structurally disadvantaged communities may be characterized by extreme levels of poverty with low-income households, single-parent households, racial and ethnic heterogeneity, and residential mobility and are likely to lead to higher rates of juvenile delinquency (Bursik and Grasmick 1993; Kingston, Huizinga,

and Elliott 2009). Ultimately, this theory holds that lower levels of collective efficacy due to the lack of social control from disorganization may increase violence (Kowitt et al., 2018). Throughout time, the scope of the theory was expanded and adjusted to include other intervening variables such as the effect of social disorganization on rates of family disruption, which, in turn, may influence crime rates (Sampson and Groves 1989). Interestingly, much of the same factors stated in the literature as imperative factors influencing health are traced to crime (Denney, Saint Onge, and Dennis 2018). Thus, a small body of literature has utilized the same frameworks to understand and examine crime in explaining health outcomes (Binswanger et al. 2012). More commonly, studies have explored the test of Social Disorganization Theory in high-risk urban neighborhoods by examining the very social factors that are primarily associated with crime to determine health outcomes (Binswanger et al. 2012; Kingston et al. 2009; Nkansah-Amankra, Agbanu, and Miller 2013). In this aspect, researchers have frequently hypothesized that neighborhood disorganization may affect physical health outcomes through its influence on three major factors: 1) health-related behaviors; 2) access to services and amenities; and 3) psychosocial processes by influencing levels of affective stress, mutual respect, self-esteem and support (Villalonga-Olives et al. 2014).

Social Disorganization Theory and Health

With the more recent emergence of Social Disorganization Theory as one of the most highly influential social theories utilized to explain neighborhood characteristics and their influence on variations in crime and delinquency rates, many studies have

altered the perspective by examining how such social structures can influence other institutions such as the family, school, church and health (Kubrin 2008; Warner 2003). Literature on family dynamics points to social disorganization theory to explain family management (Sampson 1997). According to Sampson (1997), family composition is an imperative factor of Social Disorganization Theory. Research states that single-parent households are likely to be challenged with organizations that may lead to juvenile delinquency from adolescence in the home (Leon and Walt 2001; Madyun 2011).

Additionally, social disorganization is often used to explain school and the achievement gap (Madyun 2011). One main statement about social disorganization is that neighbors' closeness and subsequent collective efforts contribute to the social control of community problems (Madyun 2011). According to this theory, the more close-knit a community is, the more likely those living within are to identify a common problem and address it by pooling resources, specifically as it pertains to crime (Sampson 1997; Shaw and McKay 1942). In this sense, family composition is the first interconnected factor of social disorganization, specifically single-parent households, because this is likely to lead to a lack of adult supervision (Sampson 1997). Literature on achievement gaps indicates that parent/family characteristics are commonly associated with a lack of social control (Kubrin and Weitzer 2003; Madyun 2011; Sampson and Groves 1989).

As Social Disorganization Theory would suggest, neighborhood disadvantage is a critical factor in delinquency and crime rates (Sampson 1997). Since the first factor in social disorganization is family composition, neighborhood disadvantage must be closely

examined. It is also indicated by factors such as the prevalence of poverty and mother-only households (Massey 1996). Massey (1996) argues that the concentration of poverty creates alienation of many types due to its possibility of eroding public order. Furthemore, Browning (2002) considers many of the social problems within neighborhoods due to family structure, arguing that poverty alone does not demolish social organization. Neighborhood disadvantage is also a well-documented factor in poor health outcomes, alongside other neighborhood features, including residential instability and ethnic heterogeneity being causal factors for poor health outcomes (Browning 2002). Although Social Disorganization Theory has been applied primarily to violence and crime, researchers have theorized that this framework applies to physical health outcomes (Browning 2002; Browning, Cagney, and Wen 2003; Kowitt et al. 2018). Past literature has argued that neighborhoods with high levels of disorder may undermine physical health for many reasons, such as increased stress and fear. Fear of disorder and a lack of collective efficacy may lead to a decline in the outdoor physical activity necessary to practice healthy habits (Karaca-Mandic, Georgiou, and Sen 2021). Researchers have sought to understand the origins of diseases like cardiovascular health disparities in a broader aspect, specifically by examining social and economic features of residential and neighborhood characteristics (Browning, Cagney, and Iveniuk 2012; Mensah et al. 2019). According to the literature, this theoretical perspective has been hypothesized by including two major areas of its influence: 1) health-related behaviors by constraining the

distribution of health information, and 2) access or lack thereof to services and amenities that are directly related to health for the residents (Kawachi and Berkman 2014).

One area in which social disorganization and health are closely related is neighborhood structural disadvantages. Past literature has shed light on the relationship between neighborhoods and poor mental health as well as physical health; however, more recently, studies have provided strong links between neighborhoods to heart diseases, cancer, childhood illnesses, low birth rate, hypertension, asthma, depression, anxiety, and many others (Diez Roux and Mair 2010; Freedman and Woods 2013). In addition, this same study found that collective efficacy and SES disadvantage influence physical health (Browning et al. 2003). Moreover, other studies have focused on how neighborhood residence influences mental health problems (Xue et al. 2005). Similar to the typical findings within social disorganization and crime, one study found that individuals living in neighborhoods with higher levels of collective efficacy report better overall health outcomes (Browning 2002). Historically, mental illness was recognized only as a condition to be examined on an individual scale (Freedman and Woods 2013) rather than being reviewed based on families or communities. While communities are a collection of individuals, neighborhoods have quantifiable characteristics that explain far more than the individual level (Freedman and Woods 2013).

CHAPTER III

REVIEW OF THE LITERATURE AND HYPOTHESES

The following section reviews the literature that accompanies the newest health pandemic, COVID-19, as it pertains to social factors that may influence confirmed cases as well as confirmed deaths among three states and their counties: New York, Texas, and California. This body of literature reviews past diseases to examine commonalities within the social factors that may have influenced the health outcomes discussed. This dissertation indicates that social factors such as unemployment, ethnicity, marital status, working conditions, citizenship, disability, and disadvantage play independent imperative roles in health outcomes on both confirmed COVID-19 cases and confirmed COVID-19 deaths.

HEALTH AND ILLNESS

Sociologists have argued that sickness and disease result from the organization, or disorganization, in society (Cockerham 2017; Kowitt et al. 2018). The social gradient of health is often discussed to understand this perspective. The social gradient of health is a term used to describe the phenomenon where people who live in more disadvantaged situations in terms of socioeconomic position are more likely to have worse health and live shorter lives than those who are more advantaged (Donkin 2014). According to the literature, the social gradient of health comprises economic, political, and social resources necessary to sustain a healthy life (Phelan et al. 2010). This facet of literature indicates that poor living and working conditions are likely to make people sick, resulting in an

increase in death within this social group (Walker et al. 2014). This area of literature further argues that disease and inequality are intimately linked (Dubowitz et al. 2015).

Past research has frequently discussed the gradient of health to be found in other infectious diseases such as HIV/AIDS, Zika virus, and many others (Donkin 2014; Jones et al. 2019). However, as it pertains to social determinants, the effects exceed infectious diseases. They pertain to chronic diseases, cardiovascular diseases, type 2 diabetes, pulmonary diseases, and many other ailments that highlight the well-documented historical health disparities (Cockerham 2017; Hanson et al. 2020; Jones et al. 2019).

Historical accounts of past pandemics, epidemics, and infectious diseases have frequently demonstrated that inequality, poverty, and social gradients of health are factors for transmitting infectious diseases (Jones et al. 2019; Quinn and Kumar 2014). Cockerham (2017) stated that concerning infectious diseases, numerous examples of the effects social factors have on local epidemics and larger pandemics, such as the Black Plague in the 18th century and Ebola in the 21st. Past studies regarding such diseases have highlighted the social context of an individual's life and the outcomes during these pandemics/epidemics (Chen and Krieger 2020; Jones et al. 2019; Quinn and Kumar 2014).

In addition, according to social disorganization, a significant component to this theoretical framework is a racial and ethnic composition about concentrated disadvantage (Denney et al. 2018). Consistent with the literature on disadvantage, Denney et al. (2018) found that lower status, arising from racial and ethnic minority status, education or employment disparities, or a combination of all those factors, limits resources that can be

ultimately leveraged toward better health and longer lives (Olshansky et al. 2012). During the influenza in 1918, Black Americans were disproportionately affected due to legalized segregation and racism restricting health access for Black patients (Evans 2020). In the 1980s, the United States faced the AIDS epidemic (CDC 2021). While anyone can be affected by HIV/AIDS, in the United States, some groups are affected more than others (CDC 2021). This is often due to the range of economic, social, and demographic factors such as discrimination, geographic region, income, and education that may put select communities at risk (Dubowitz et al. 2015; Williams and Collins 2016). In 2018, it was estimated that while Blacks/African Americans made up only 13 percent of the US population, they accounted for 41 percent of the people with HIV (U.S. Department of Health & Human Services 2020).

Similarly, Hispanics make up approximately 18 percent of the US population; however, they account for 23 percent of people with HIV, displaying racial health disparities (U.S. Department of Health & Human Services 2021). Furthermore, Black women are 20 times more likely to be HIV positive. In contrast, Hispanic/Latino women are four times more likely to be infected than white women (CDC 2021).

While past infectious disease outcomes within nested communities partly resulted from legalized segregation, these issues persist today due to a continuous occurrence of neighborhood racial segregation that may restrict access to wider networks of healthy living (Denney et al. 2018; Markides and Eschbach 2005). Krivo et al. (2013) indicated that racial groups tend to inhabit and utilize different ethnoracial spheres in employment, shopping, places of worship, otherwise referred to as collective efficacy, which may keep

groups segregated but also provides differential access to resources that may be found outside of this selective community. Emerging literature on community disadvantage has indicated that racial and ethnic minorities in disadvantaged neighborhoods may have less access to outside resources and consequently experience the burdens of living in such communities (Krivo et al. 2013).

While health disparities are primarily noted in the United States, they can be found worldwide (Adler and Stewart 2010). Past theoretical frameworks have emphasized place-based approaches to health disparities and have coupled the perspective with literature on neighborhood or area effects on health on community organization and development (Diez Roux 2001; Sampson 2003). Community factors are numerous and complex. Access to the primary sources of living a healthy life, such as affordable healthy foods, and a limited or lack of community resources, such as parks that promote regular activity, contribute as critical factors to overall health (Kowitt et al. 2018). Past studies have found that individuals who live in low poverty neighborhoods are less likely to develop diabetes than those in high poverty neighborhoods (Ludwig et al. 2011). A growing body of literature on neighborhoods indicates that neighborhood characteristics are associated with health outcomes (Diez-Roux and Mair 2010; Kowitt et al. 2018). Social Disorganization Theory suggests that in addition to neighborhood disadvantage, neighborhood factors such as residential instability and ethnic heterogeneity influence health outcomes (Browning 2002; Kowitt et al. 2018). In a study examining social disorganization and diabetes, the researchers found that individuals living in neighborhoods with high social disorganization had a higher likelihood of

having type 2 diabetes than neighborhoods with medium social disorganization (Kowitt et al. 2018). In addition, that same study found that neighborhoods with high economic disadvantages had higher self-reported use of emergency services. Emergency services included any first responders that may have been called to assist the residents of those neighborhoods.

PAST INFECTIOUS DISEASES

Infectious diseases are caused by microorganisms such as viruses, fungi, bacteria, or parasites (University of Utah 2021). These diseases may be contracted from other people who may carry the disease, environments, animal contact, and even insect bites. Throughout history, there have been many infectious diseases that have resulted in a high rate of death. Such diseases include Ebola, HIV/AIDS, Shingles, Chickenpox, Influenza, Malaria, Measles, Tuberculosis, and many others (Brachman 2003; Rohr et al. 2019). Interestingly, most infectious diseases include similar symptoms like fever, fatigue, diarrhea, and muscle aches (Brachman 2003; Rohr et al. 2019). However, infectious diseases may also include more specific symptoms as well as lead to more severe outcomes. Past scholarly literature has allowed for understanding current and future infectious diseases by providing perspective on commonalities among the diseases (Wilson et al. 2012). Such commonalities include communities of higher risk, nested disadvantaged populations, and even projected outcomes of infectious disease based on demographics (Wilson et al. 2012).

Literature on health disparities has also focused on chronic diseases when discussing differences among minorities by providing insight on social and racial barriers

faced that ultimately affect health outcomes (Zavala et al. 2021). In particular, cardiovascular diseases are often cited in the literature as a leading disease among all social groups; however, they may affect select racial/ethnic and social groups more than others (Zavala et al. 2021). While literature regarding cardiovascular diseases is often examined, social structures examine causal factors to this chronic disease (Strutz, Herring, and Halpern 2015). Moreover, while it is usually stated in the literature that demography and biological/genetic determinants may play a significant role in the risk of predisposing specific communities to cardiovascular diseases (Kuzawa and Sweet 2009; Muncan 2018), there has been a frequent body of literature that has focused on the causal roles of social circumstances in disease risks and progression (Arnett et al. 2016; Kurian et al. 2007; Kuzawa and Sweet 2009). According to the CDC (2019), non-Hispanic Black persons were more than twice as likely as non-Hispanic Asians to die of heart diseases between 1999–2017. Furthermore, literature on health disparities has illustrated that hypertension, a prime factor in cardiovascular disease risk, is more prevalent among Hispanic and American Indian minorities than non-Hispanic Whites in the United States (Chen et al. 2016). One study regarding cardiovascular disease among minorities found that African Americans, in particular, had higher odds of hypertension, diabetes, and obesity than their White counterparts (Bell et al. 2018).

According to a study by Golden et al. (2021), it was determined that similar outcomes recognized during the COVID-19 pandemic were also found during the SARS-CoV-2 outbreak and the vulnerable communities that were most impacted by the outbreak. Individuals from underrepresented racial and ethnic groups, specifically

African Americans and Hispanics, are more likely to reside in congregate living environments where they live in multigenerational households and have a higher likelihood of obtaining jobs that require personal work such as meatpacking, service, agriculture, and healthcare (Golden et al. 2021). Moreover, Black people tend to live in close communities, and proximity becomes a significant concern during a disease outbreak (Laurencin and McClinton 2020). In addition, differences in the prevalence of underlying conditions among minority groups may also be associated with increased susceptibility to COVID-19 complications and death (Golden et al. 2021). For example, the current analysis indicates that diseases such as diabetes, cardiovascular diseases, hypertension, and obstructive pulmonary disease, are among the most prevalent underlying conditions seen within patients hospitalized with COVID-19 (Alcendor 2020). Studies have determined that 45.4 percent of U.S. adults are at an increased risk of suffering from COVID-19 complications if they are already challenged with any of the listed underlying diseases (Alcendor 2020). As mentioned above, race and SES affect access to healthcare in the United States (Alcendor 2020). Past medical studies have frequently documented the prevalence of type 2 diabetes and adult minority populations, and such disparities will continue to persist until 2050 (Butler 2017; Copeland et al. 2017; Pinhas-Hamiel and Zeitler 2007). African Americans, Hispanics/Latinos, and American Indians are more likely to have type 2 diabetes than non-Hispanic Whites, thus increasing the likelihood of contracting the COVID-19 virus (Alcendor 2020). Moreover, racial and health disparities are also commonly found in diseases like hypertension, where the highest prevalence is documented within the African American community,

who have the least control of the disease compared with non-Hispanic Whites (Stephens, Artiga, and Paradise 2014).

More recently, COVID-19 has magnified many health outcomes that older infectious diseases have shown over time due to the differences in the duration of development of past illnesses compared to the most recent contagious disease, COVID-19 (Lau et al. 2020). Researchers are attempting to shed light on this rapid infectious disease as it has impacted many past infectious diseases in a short period (Morris et al 2017). While this current pandemic continues to develop, past infectious diseases are relied on for projections on outcomes due to COVID-19. As of April 2020, 196 countries were affected by COVID-19 (Lau et al. 2020; Morris et al. 2017).

CONCENTRATED POVERTY

Concentrated poverty is referred to as the high incidence of poverty located in specific neighborhoods or groups of neighborhoods (Iceland and Hernandez 2017). According to the U.S. Census Bureau (2021a), if a family's total income is below the threshold for a family of that size, then that family and all individuals within it are considered to be living in poverty. Trends in concentrated poverty throughout the United States have been volatile in the past several decades (Iceland and Hernandez 2017). In other words, there is a continuous increase in poverty throughout the nation (Iceland & Hernandez 2017). According to Price et al. (2018), more than a tenth of the U.S. population is currently living in poverty. As poverty remains a leading factor in health disparities, nested communities where income segregation is involved, there continues to be a rise in poor health outcomes within these disadvantaged areas (Benfer et al. 2020).

Unfortunately, poverty influences health care, housing, and employment (Benfer et al. 2020)

As income is recognized to be strongly associated with morbidity and mortality, it has been stated that poor health also contributes to reduced income, increasing poverty (Khullar and Chokshi 2018). Moreover, individuals considered to be low-income are more likely to face barriers in accessing medical care than higher-income Americans (Khullar and Chokshi 2018). Americans who fall below the poverty threshold are less likely to have access to adequate health insurance and technologies since they are more likely to be employed by organizations that do not offer health benefits (Khullar and Chokshi 2018). Unfortunately, more than 27 million Americans remain uninsured (Moore and June 2020). According to the U.S. Census Bureau (2021b), more than 9 percent of the United States population is uninsured, with states like Texas, Florida, and New Mexico each having an uninsured population of more than 14 percent. In one study, Dunlap et al. (2010) linked the macro-level social forces and the micro-level social forces, arguing that social forces examined on the macro-level are likely to lead to consequences at the micro-level. It is frequently noted that poverty and inequality are higher in America than in most other countries (Dunlap et al. 2010). Primarily, there is a higher concentration of poverty within inner cities with a higher population density (Wilson 2007).

Moreover, individuals from low-income communities are more likely to partake in behavior-risk activities such as substance use, smoking, obesity, and lower levels of physical activity (Carnethon et al. 2017; Firebaugh and Acciai 2016; Woo et al. 2004).

Low-income neighborhoods tend to be more crowded and have a higher density of tobacco retailers. Thus, individuals who make $35,000 a year or less are three times more likely to smoke than those who make an annual income of $100,000 or more (Dunlap 2018; Khullar and Chokshi 2018). Impoverished communities also contend with other structural challenges that contribute to higher rates of illnesses such as obesity and chronic diseases such as a higher density of fast-food restaurants, less access to fresh foods, and environments not conducive to physical activity (Moore and June 2020). As concentrated poverty states, nested poverty is made up of individuals who collectively represent the community and its social standing (Moore and June 2020; Peterson and Litaker 2010). In particular, regional poverty is often discussed in the literature (Peterson and Litaker 2010). The characteristics of rural and urban counties vary significantly; thus, the potential influence of regional poverty on health care may operate differently (Peterson and Litaker 2010). Contextually, rural poverty hinders opportunities for employment and restrictions in the labor market compared to more urban regions (Peterson and Litaker 2010).

Emerging data has found that socioeconomic factors such as low-income communities significantly influence COVID-19 infection and death rates within these communities (Benfer et al. 2020). Within impoverished communities, significant health disparities have been identified in illnesses such as higher rates of chronic diseases, communicable illnesses, and premature mortality than communities above the poverty threshold (Dunlap et al. 2018; Price et al. 2018). According to Bhowmik et al. (2021), it was found that there was an increase in the COVID-19 mortality rate among counties

with a higher income inequality ratio as compared to counties with lower income disparities. Past pandemics have provided evidence that individuals living in poverty, marginalized groups, and people of color are disproportionately impacted due to the social determinants of health. Thus, they appear similar to the health disparities emerging in the current COVID-19 pandemic (Benfer et al. 2020).

Higher rates of unemployment, less access to healthcare, greater risk of eviction during the pandemic have led to higher mortality rates due to COVID-19 (Benfer et al. 2020).

COVID-19

According to the CDC (2020b), coronavirus, most commonly known as COVID-19, is a medical illness caused by a virus spread from one person to another. The symptoms of the sometimes fatal virus can range from mild or no symptoms to severe illness and even possible death (CDC 2020b). COVID-19 affects individuals differently, as there is no concrete symptom of the virus (Gross et al. 2020; Townsend, Kyle, and Stanford 2020). Medical analysts have found that the leading cause of the spread of this virus may occur from person-to-person interaction, specifically, close contact with someone who may be carrying the virus. Transmission may occur when someone who has the virus coughs or sneezes and transmits the virus through droplets that land in the mouth or nose of nearby people or is inhaled into the lungs (Golden et al. 2020; Gross et al. 2020; Shi et al. 2020). However, recent findings have also indicated that possible transmission may occur through the touching of surfaces or objects that have the virus on them and even through air ventilation systems (CDC 2021). Additionally, airborne

transmission has been frequently assessed as being a transmitting factor of COVID-19. According to the CDC (2020a), some infections can spread when small particles linger in the air for several minutes and even hours, affecting those who maintain distance from those around them.

In March 2020, the World Health Organization (WHO) declared the COVID-19 outbreak an official pandemic. According to the WHO (2021a), a "pandemic" is defined as "an epidemic occurring worldwide, or over an extensive area, crossing international boundaries and usually affecting a large number of people." With nearly 170,000 confirmed cases by March 2020, the rate of confirmed cases has continued to rise monthly (WHO 2020a). As of July 2021, there have been an estimated 192 million confirmed COVID-19 cases since its first appearance worldwide and more than 4 million deaths worldwide. In the United States, in particular, there have been more than 35 million confirmed cases since its first appearance, with a prediction of more than 600,000 confirmed deaths. When examining the United States, in particular, states like California (44,152 deaths, 3.42M cases), Texas (39,490 deaths, 2.5 million cases), and New York (44,387 deaths, 1.48 million cases) remain to be the three states with the most deaths due to COVID-19, as of February 2021 (WHO 2020a).

As there continue to be scientific developments on this new virus, recent findings have suggested that specific populations are more vulnerable to being at risk of exposure to the infectious disease, as well as death from COVID-19, than others (Bhala et al. 2020; Gold et al. 2020; Townsend et al. 2020). According to the WHO (2020b), it has been found that people who are over the age of 50 or have underlying health conditions such as

lung cancer or heart disease are more prone to contracting the infectious disease than any other age group.

Moreover, sex differences in the likelihood of contracting COVID-19 have been shown to have consistent findings (Bhala et al. 2020). According to a study by Drefahl et al. (2020), it was found that males were more likely to contract COVID-19 in their research; these findings correlate with findings from the CDC, which indicate that men are approximately two times more likely to contract and die due to COVID-19. Reasons for this sex difference have not been completely determined. In addition, age indicates both the risk of contracting the illness and the severity of the outcomes once infected (Bhala et al. 2020; CDC 2020a; Malik et al. 2020). According to the CDC (2020b), the risk for severe illness due to COVID-19 increases, with older male adults being at the highest risk. The CDC (2020a) states that 8 out of 10 COVID-19 deaths reported in the United States are adults who are 65 years old and older. In particular, individuals in their 50s are at higher risk for severe illness than individuals in their 40s, and those aged 85 or older are at the highest risk (CDC 2020a; Laurencin and McClinton 2020). Severe illnesses due to this infectious disease include hospitalization, intensive care, the need for a ventilator to assist with breathing, and even possible death (Wang et al 2020). Undoubtedly, this virus has impacted the entire world. For the United States, in particular, many states were affected differently due to their significant circumstances, such as population density, racial/ethnic makeup, geographic location, alongside many other reasons (Probst, Lee, and Bazzoli 2020) However, states with the highest populations are more likely to have higher rates of COVID-19 cases and deaths due to an increase in

social interaction and density (Probst et al. 2020). In particular, California, which is ranked as the number one most populous state in the United States, and located on the far west coast of the country, is challenged with significantly high COVID-19 cases and deaths daily. California was the first state to mandate a stay-at-home order requiring all residents to stay at home except to go to essential jobs or shop for essential needs (AJMC Staff 2021).

Furthermore, Texas, considered the second most populous state, located in the central United States, faces increased COVID-19 cases and deaths because of its high population. On the far east coast, states like New York are significantly impacted due to their population density and geographic location. This study focuses on these three states for three main reasons that allow for the general examination of COVID-19 health outcomes throughout the United States: 1) their increased population density, as compared to other states in the United States, each of the three states have significantly high population density: 2) each of the three states is spread apart from each other providing examination of the United States, from coast to coast, California is located in the far west coast of the country, Texas is located in the central area of the country, and New York is located on the far east coast of the country, and 3) the racial and ethnic makeup of these three states are inclusive for examination of this study as they each have dominant racial/ethnic groups.

NEW YORK

New York is located in the northeastern United States and is ranked as the 30th largest state in geographical size. Yet, it is considered to be the fourth most populous state

in the United States, right behind California (39 million), Texas (29 million), and Florida (21 million; World Population Review 2021a). In July 2015, there were an estimated 19,795,791 New York residents (World Population Review 2021b), with a population density of 421 people per square mile. New York is home to the largest city in the US, New York City (World Population Review 2021b). Due to its high population density, New York has been one of the states with the highest COVID-19 cases and mortality rates (World Population Review 2021a). As of April 2021, there have been an estimated total of 923,036 COVID-19 cases and 32,456 deaths in New York City since the beginning of the COVID-19 pandemic (NYC Health 2021). On average, there were approximately 1,912 new cases per day as of April 2021. According to the CDC (2021), New York City was considered an early epicenter of the COVID-19 pandemic. In other words, it may have been one of the first, if not the first, to have residents who contracted the virus. Within the first few months of the pandemic, this state already had approximately 203,000 confirmed laboratory cases with a crude fatality rate of 9.2 percent among confirmed cases and 32.1 percent among hospitalized patients (CDC 2020b). For New York, in particular, the highest rates of cases, hospitalizations, and deaths were nested in communities of color, areas of high poverty rates, and among persons 75 years or older with underlying conditions (CDC 2020b; Thompson et al. 2020).

Moreover, the economic standing of New York was drastically affected. As of March 2021, New York City was still down approximately 585,000 payroll jobs compared to February 2020, having gained only 37 percent of job losses (Department of

Labor 2021). In one study regarding COVID-19 outcomes, in predominantly African American counties, there was found to be a COVID-19 infection rate of 137.5 per 100,000 and a death rate of 6.3 per 100,000, which was determined to be three times higher than counties that are predominantly non-Hispanic White (Alcendor 2020; New York State Department of Health 2021). Furthermore, the death rate in predominantly African American counties was found to be six times higher than in predominantly White counties (New York State Department of Health 2021).

The unemployment rate can help provide governmental and private institutions a summarized overview of the overall standing of the civilian labor force (Department of Labor 2021). According to the National Bureau of Economic Research (2021), the United States entered a recession in February 2020. In June 2020, the unemployment rate for New York had reached 20.3 percent. However, because of the diversity in the counties within this state, these rates are not shared evenly across New York (National Bureau of Economic Research 2020). For example, as of October 2020, the unemployment rate was the highest in the Bronx at 17.5 percent, followed by boroughs like Brooklyn (13.3 percent) and Queens (13.1 percent), with the lowest rate being in Manhattan (10.3 percent; U.S Bureau of Labor Statistics 2021).

New York is expected to face continuous financial struggle due to the setback from the current pandemic. National data indicates that groups most likely to face financial difficulties due to the pandemic are workers with lower educational attainment, younger workers, Black or Hispanic workers, and women (U.S. Bureau of Labor Statistics 2021).

TEXAS

Texas is located in the south central region of the United States. It is the second largest state by geographical area and population (U.S. Census Bureau 2021d). According to the United States Census Bureau (2021d), as of July 2021, there is an estimated population of over 29 million residents, making it the second-most populous state in the United States after California (39 million).

Like New York, Texas has also been rated as one of the top states to have confirmed COVID-19 cases (Texas Department of Health and State Service [TDHSS] 2020). By January 2021, the TDHSS (2020) had documented more than 1.7 million COVID-19 cases in the state of Texas alone, with nearly 30,000 deaths from the infectious disease. Additionally, literature on racial disparities in Texas indicates that Hispanics are two times more likely than non-Hispanic Whites to test positive for COVID-19, three times more likely than non-Hispanic Whites to be hospitalized due to COVID-19, and 2.3 times more likely to die than non-Hispanic Whites due to COVID-19 (CDC 2021). Black people or African Americans are 2.8 times more likely than non-Hispanic Whites to be hospitalized due to COVID-19 and nearly two times more likely to die than non-Hispanic Whites due to COVID-19 in Texas (CDC 2021). Asians are twice as likely to be hospitalized and die due to COVID-19 than non-Hispanic Whites overall (CDC 2021).

For Texas, unemployment was initially staggering, with the months between February and April 2020 having lost more than 1.4 million jobs in Texas only (Texas Workforce Commission 2021). By the beginning of January 2021, Texas unemployment

had continued to rise with more than 4.1 million initial claims for unemployment insurance, record-high numbers (Texas Workforce Commission 2021). Unfortunately, those affected financially are predominantly women and minorities, specifically those working as service providers, such as hotel employees and restaurant workers.

CALIFORNIA

California is located in the western region of the United States and stretches from the Mexican border along the Pacific coast (WHO 2021b). California is considered to be the most populous state in the United States with an estimated population of 39,512,223 as of July 2019 (U.S. Census Bureau 2021c). It has the fifth largest economy with more than 65 million annual visitors and more than 19 million civilians in the labor force (U.S. Census Bureau 2021c). Because of its high population, California has been one of the top states with COVID-19 cases (Curley 2021). As of April 2021, California has had 3,634,775 confirmed COVID-19 cases resulting in 60,273 deaths (U.S. Census Bureau 2021c). Hispanics and Latinos make up more than 55 percent of the confirmed cases in California while Whites make up 20.3 percent (U.S. Census Bureau 2021b). Additionally, Hispanics and Latinos alone make up more than 46 percent of confirmed deaths in California due to COVID-19, as compared to Whites who make up 31 percent of confirmed deaths in California due to COVID-19. African Americans and Asians make up 4.2 percent and 6.9 percent of confirmed cases of COVID-19 in California and 6.3 percent and 12.2 percent of confirmed deaths due to COVID-19 in California (California Department of Public Health 2021). The uneven distribution, such as minority communities being more likely to contract the deadly virus, reveals significant racial

disparities in California. Like most states, California was drastically affected by the COVID-19 pandemic, with a rapid increase in unemployment. According to the Employment Development Department (2021), California's unemployment rate increased by 0.9 percent points in December 2020 as 52,000 jobs were lost due to the COVID-19 pandemic.

STRUCTURAL INEQUALITIES AND COVID-19

Structural inequality is defined as "a condition where one category of people have attributed an unequal status concerning other categories of people" (Bentley 2020:62). According to Bentley (2020), structural inequalities in health can be categorized into 1) socioeconomic and 2) developmental and life course.

Socioeconomic inequalities refer to neighborhood deprivation, lack of access to healthy food, green space, gyms, parks, health services; unemployment; unaffordable health access; food services; and crowded and low-quality housing (Azar et al. 2020; Bentley 2020; Matricardi, Dal Negro, and Nisini 2020). Developmental and life-course are also essential components to structural inequalities. Developmental components include metabolic conditions such as overweight and obesity, hypertension, cardiovascular diseases, and type 2 diabetes (Azar et al. 2020; Bentley 2020; Cao et al. 2020; Levine and Crimmins 2014; Nguyen et al. 2020; Simons, Cillessen, and Hazelzet 2016). Life-course components focus more on behavioral matters such as smoking, drinking, and drug use (Bentley 2020).

As mentioned previously, racial and ethnic minorities bear a disproportionate burden of mortality and have done so throughout history (Gee and Hicken 2021). Health

inequalities can be found in heart disease, infant mortality, and cancer (Gee and Hicken 2021). The fundamental causes of these health outcomes have frequently been reported from structural inequalities (Killerby et al. 2020; Moore et al. 2020). Social segregation is a significant component of structural inequalities (Bailey et al. 2017; Gee and Hicken 2021). Social segregation refers to the separation of social groups, specifically residential segregation (Gee and Hicken 2021). Residential segregation may influence health by concentrating poverty, infectious agents, environmental pollutants, and other adverse conditions (Gee and Payne-Sturges 2004). Such segregations include workplaces, schools, and health care facilities that ultimately contribute to health disparities (Walsemann and Bell 2010). Recent studies state a growing concern that racial and ethnic minority communities face morbidity and mortality at unique rates when faced with major diseases (Walsemann and Bell 2010). Other studies have indicated that health disparities among these marginalized populations go further than what is currently presented (Andrasfay and Goldman 2021). One study projected that COVID-19 would reduce the U.S. life expectancy in 2020 by 1.13 years (Andrasfay and Goldman 2021). However, for Black people and Latinos, estimated reductions are three to four times higher than for Whites. Unfortunately, COVID-19 is expected to reverse 10 years of progress in closing the life expectancy gap between Blacks and Whites (Andrasfay and Goldman 2021).

Demographic Composition and COVID-19

Extensive sociological and medical literature has frequently implied that race and ethnicity are socially constructed (Muncan 2018). In general, racial minorities are faced

with a disproportionate burden of morbidity and mortality (Muncan 2018). There has been increasing evidence that some racial and ethnic minority groups are disproportionately affected by COVID-19 (Gross et al. 2021; Probst et al. 2020). In 2020, the CDC stated that deaths due to this virus continue to disproportionately affect the older population and certain racial and ethnic minorities, mainly Hispanic persons (CDC 2020a). While 51 percent of deaths due to COVID-19 are White persons, Black and Hispanic persons were disproportionately represented (Laurencin and McClinton 2020). In August 2020, Black persons still accounted for 18.7 percent of overall deaths despite representing just 12.5 percent of the overall U.S. population. Similarly, Hispanics represent 24.2 percent of descendants yet make up 18.5 percent of the U.S. population.

The immediate impact that COVID-19 has magnified is that racial health disparities throughout the United States can be found within concentrated minority communities (Laurencin and McClinton 2020). Overall, it was found that communities made up of an increased Asian population were the first to be faced with poor COVID-19 outcomes, thus, have overwhelming case and death rates (Health Affairs 2021). One study indicated that for a city that is one-third Asian, such as San Francisco, Asian Americans experience four times higher case fatality rates than the overall population (Health Affairs 2021). Likewise, in general, literature has been consistent in indicating that African Americans are more likely to reside in densely populated low-income neighborhoods with less access to amenities and are more likely to be employed in jobs where more public exposure is required (Bäcker 2020a; Bhowmik et al. 2021). While research on the county level remains scarce, one significant study by Azar et al. (2020)

found that California's death rate among African Americans is higher than that group's representation in the population and even more disproportionate in some counties. Notably, by late 2020, counties like Los Angeles County showed a 14 percent mortality rate among the African American population, yet make up only 9 percent of the county population (Azar et al. 2020). Within this same study, COVID-19 outcomes within zip code areas were examined to understand better the concentration of minority areas regarding health (Azar et al. 2020). In doing so, disparities were found in areas where a high percentage of Medicaid-insured residents were likely to be in lower-income neighborhoods versus commercially insured beneficiaries, likely to be higher-income patients (Azar et al. 2020). Such findings indicated that as a group, African American patients tended to live in the lower-income areas and thus, were less likely to seek COVID-19 medical attention due to financial stress that may have required the need to continue employment and delay medical care despite symptoms (Azar et al. 2020). Similarly, recent studies regarding COVID-19 and racial composition postulated that counties with higher proportions of African- Americans were more likely to have an increase in COVID-19 transmission rate (Bäcker 2020b; Bhowmik et al. 2021).

Regarding the female population, counties with a higher proportion of females positively impacted the COVID-19 transmission rate (Bhowmik et al. 2021). Thus, it was found that in counties with higher percentages of the female population, there was likely to be an experienced increase in the number of COVID-19 cases compared to other counties with a lower percentage of the female population (Bhowmik et al. 2021). Further, when examining age distribution proportions, it was found that when it came to

transmission, in particular, there were higher transmission rates within age groups 18 years and older (Bhowmik et al. 2021).

Past studies have highlighted the disproportionate impact regarding health and race exposed through common illnesses throughout history (Alcendor 2020; Cheng et al. 2007; Hui et al. 2015). In the earlier stages of the pandemic, it was speculated that African Americans were more immune to the disease and least likely to contract the virus (Alcendor 2020). However, as the transmission of the disease continued to increase, specifically in cities known to be densely populated, it emerged that African Americans and Hispanics were disproportionately impacted by the virus and continues to become more apparent as the spread of the illness continued (Pan et al. 2020; Thebault et al. 2020).

Educational Attainment and Health

An abundance of literature has shown that good health is associated with economic and social resources such as income, wealth, marriage, and education (Brown, O'Rand, and Adkins 2012). Since educational attainment is an imperative factor in the SES gradient, literature has suggested that educational attainment holds a pivotal role in good health (Morton et al. 2016). In fact, in one study, it was found that educational attainment was the leading SES indicator in predicting smoking prevalence (Morris et al. 2018; Morton et al. 2016). In another study involving vascular risk, a significant trend was found toward increased vascular risk with decreasing levels of education (Morton et al. 2016). According to Morton et al. (2016), individuals who had no formal education were at a 46 percent higher risk of vascular events such as fatal or nonfatal cardiac

illness, cerebrovascular illness, and/or peripheral vascular illnesses than participants who had tertiary education. In this same study, significant findings regarding mortality across educational levels were also substantial (Morton et al. 2016). Mortality due to any vascular event was twice as likely among participants who had no formal education than those who had tertiary education (Morton et al. 2016).

Furthermore, education, or the lack thereof, is commonly associated with health habits (Mistry, D'Orsogna and Chou 2018). In 2018, smoking was the top cause of death (Mistry et al. 2018). In the United States, SES is a leading determinant of smoking prevalence and is acquiring poor health outcomes (CDC 2019). According to the CDC (2019), individuals with higher educational attainment have a lower cigarette smoking rate than the general population. For those who only have a general equivalency degree (GED) certificate, smoking prevalence is the highest of any other educational group (Mistry et al. 2018). Individuals who have at least a bachelor's degree smoke cigarettes for half the duration of that of people with only a high school education (Mistry et al. 2018; Siahpush et al. 2009).

The influence education has on poor health habits may be conditional upon how education translates into income and wealth, which is primarily affected by race (Assari and Mistry 2018). Regardless of education, Blacks are more likely to work in jobs with minimum wage salaries, poor working conditions, unstable and stressful working conditions, and minimum opportunities for advancement and promotion (Assari and Mistry 2018). Additionally, at every level of education in their study, Blacks are more likely to be exposed to stress that hinders their health (Assari and Mistry 2018).

Interestingly, similar findings are found when examining educational attainment for Hispanics (Assari, Farokhnia, and Mistry 2019). As educational attainment increased, the duration of alcohol use and binge drinking decreased (Assari et al. 2019). Yet, amongst Whites, highly educated Hispanics were more likely to be at risk of frequent alcohol binging compared to their non-Hispanic White counterparts, possibly due to the fact that upward social mobility is more stressful among ethnic minority groups (Assari et al. 2019; Assari and Lankarani 2018; Hudson et al. 2012) As it pertains to COVID-19 specifically, recent studies have found that educational status is closely correlated with the COVID-19 mortality rate. One county-level study indicated that the likelihood of COVID-19 mortality increases where there is an increased share of people with less than a high school education in a county (Bhowmik et al. 2021). However, literature on educational attainment and COVID-19 outcomes is still at its earliest stages (Upshaw et al. 2021). Instead, much of the research in this area points to occupational status to better understand this social determinant (Upshaw et al. 2021). In other occupations such as meat and poultry factories, it was determined that of the 130,578 workers employed in the 115 affected factories, 3 percent tested positive (4,913 cases), and 0.4 percent died (Dyal 2020).

Occupation and COVID-19 Outcomes

Since the earliest stages of COVID-19, occupation was closely examined to better project rates of infection (Magnusson et al. 2021). With proximity being an essential indicator of the risk of COVID-19 transmission, studies soon found concerning differences among specific occupations (Magnusson et al. 2021). The first reports of

occupational risk of COVID-19 emerged from Singapore, indicating that locally transmitted cases were commonly found within occupations involving tourism and trading (Yang et al. 2020). Soon after, it was found that essential workers such as personal service occupations and machine and plant operatives had a higher risk of contracting the illness as compared to non-essential workers, who are believed to more commonly work from home (Magnusson et al. 2021; Mutambudzi et al. 2021).

This pattern has persisted in other countries throughout the world as it was found that in England, Wales, and Sweden, there was a sudden increase in COVID-19 mortality rates within employees of occupations such as sales and retail, transportation (taxi/bus drivers), and catering services (Günther et al. 2020; Mutambudzi et al. 2021). Comparably, occupations such as teachers and those that allowed for working from home had lower rates of contraction and mortality due to COVID-19 (Günther et al. 2020; Xu et al. 2020). In China, laborers, retail workers, agricultural workers, and healthcare workers were most likely to become infected with COVID-19 (Chu et al. 2020). Specifically, one study found that the first wave of infection in China may have stemmed from migrant labor workers, as 29.1 percent of COVID positive patients were migrant workers (Fan et al. 2020). Another study examined 26 admitted COVID-19 positive cases in Liaochang and found that most of those admitted were retail staff (Wang, et al. 2020). In the United States, reports found the prevalence of COVID-19 among employees of homeless shelters, correctional or detention facilities, and meat processing facilities (Tobolowsky et al. 2020). In counties in Washington, specifically King County, 21 percent of staff at three homeless shelters were confirmed to have COVID-19

(Tobolowsky et al. 2020). In counties within the cities of Boston, San Francisco, and Atlanta, 11 percent of staff at 19 different homeless shelters tested positive for COVID (Mosites et al. 2020). Among staff who were employed at correctional or detention facilities, the CDC found that within 37 states in the United States, there was a reported total of 2,778 cases of COVID-19 among these staff members, of whom 3 percent became hospitalized at some point, and 1 percent died (Wallace et al. 2020).

Additionally, a recent study from the CDC (2020a) found that health care workers in the United States accounted for 19 percent of confirmed COVID-19 as it pertains to the occupation (CDC 2020a; Gibson and Greene 2020). Overall, occupation has been determined as one of the most imperative mediating factors for COVID-19 contraction, transmission, and mortality (Magnusson et al. 2021). With close physical proximity having an increased likelihood of contracting the virus, services workers, specifically bus drivers and cashiers, and other essential workers are recognized as being the occupations to most likely get the virus, yet are least likely to be granted time off despite the increased rate of transmission (World Economic Forum 2021).

Social and Formal Support (Relationship Factors)

Studies have shown that social support has been reliably related to morbidity and mortality (Uchino 2006). In 1979, researchers Berkman and Syme presented in their research the extent to which an individual's social connections influence their overall mortality. Their findings concluded that people who had lower levels of social connections, might it be friends, family, or acquaintances, had higher mortality rates as a group compared to those who had higher levels of social connections (Berkman and

Syme 1979; Uchino 2006). The literature defines social support as both the structures of an individual's social life, including group memberships, the existence of familial ties, and the more explicit relational functions that may serve as emotional support mechanisms such as dating and marriage (Cohen et al. 2004). Uchino (2006) found that social support influences physical health outcomes in two major pathways. First, one pathway involves the behavioral processes that include health behaviors and may adhere to medical regimens such as those discussed by social control and social identity theorists (Lewis and Rook 1999; Umberson 1987). This view argues that social support is a health-promoting mechanism that may facilitate healthier behaviors such as exercise, not smoking, and healthier eating habits (Lewis and Rook 1999; Uchino 2006; Umberson 1987). However, not all social relationships encourage healthier behaviors, which may, in turn, set a negative example and/or promote risky behaviors that may increase poor physical health outcomes (Uchino 2006). The second major pathway mentioned in Uchino's (2006) research involves the psychological processes that social relationships may be equipped with, such as appraisals, emotions or moods, and feelings of control. Both pathways of support have frequently been mentioned in health literature to be linked to physical health outcomes (Uchino 2006). For example, feelings of stress or depression can adversely influence the practice of health behaviors.

Chen et al. (2018) found that health literacy and social support were positively related to self-management behaviors in more recent literature. In this same study, it was also found that social support, health literacy, and marital status were significant predictors of self-management behaviors (Chen et al. 2018). Marital status has often been

discussed in the literature regarding health (Lawrence et al. 2019; Liu and Umberson 2008). In general, studies on marital status and health find that married individuals are said to be healthier and live longer than those who have never married (Lawrence et al. 2019; Lindström 2009). As mentioned in the literature, healthier individuals are more likely to get married and less likely to divorce than those reported as not healthy (Carr and Springer 2010). One of the most frequent hypotheses regarding the health and longevity of benefits of marriage is the "buffering hypothesis," which states that individuals who have strong social support are more likely to be better at coping with stress, mitigating its health consequences (Carr and Springer 2010). In addition, married people are accompanied by greater beneficial health effects, including higher household income and a greater likelihood of having health insurance (Carr and Springer 2010; Holt-Lunstad et al. 2015).

An imperative factor in promoting better health due to marriage is the increased likelihood of having and maintaining health insurance (Robles et al. 2014). One study found that, on average, Americans are expected to spend at least 10 years without health insurance during a typical lifetime. Unfortunately, more than 40 percent of these expected years are spent in less-healthy environments (Kirby and Kaneda 2010).

In 2019, 26.1 million Americans did not have health insurance at any point (CDC 2020b; Gold et al. 2020). Compared to non-Hispanic Whites, African Americans and individuals of Hispanic origin are less likely to have insurance coverage (Sohn 2017). In 2019, 27 percent of the Hispanic population did not have health insurance, 9.8 percent of White Americans, 9.5 percent of Asian Americans, and 13.6 percent of Black Americans

did not have health insurance. Prior literature has identified employment, citizenship, income, and language as all possible associations for the lack of insurance (Firebaugh and Acciai 2016; Marshall 2005). Frequent literature has shed light on the common consequences of being uninsured (Kirby and Kaneda 2010). Specifically, being uninsured leads to an increase in the likelihood of going without needed medical care, lacking routine health care visits, and receiving a lower quality of health, which increases poor health (Hadley 2003; Kirby and Kaneda 2010).

Additionally, being uninsured also contributes to financial threats as it may lead to a significant burden of debt from unpaid medical expenses (Himmelstein et al. 2005; Kirby and Kaneda 2010). Uninsured individuals are typically faced with higher health care expenses when they require health because they are charged at higher rates than insured patients supported by insurance carriers who negotiate prices on their behalf (Kirby and Kaneda 2010). Yet, the effects of non-insured individuals hold consequences met by the entire family when resources are drained from families as a collective result. Furthermore, communities as a whole are faced with consequences when hospital emergency rooms and community clinics are overburdened in impoverished communities with large numbers of uninsured individuals, which in turn, can affect the quality of care for all community residents (Derlet, Richards, and Kravitz 2001).

Health insurance coverage and access to care have been essential in the wake of the COVID-19 pandemic (Gangopadhyaya and Garrett 2020). COVID-19 testing is imperative to the preventative measures of spreading the virus (Gangopadhyaya and Garrett 2020). While there has been an increase in health programs intended to encourage

testing, the lack of coverage for other illnesses unrelated to COVID-19 may dissuade uninsured people with symptoms of the virus from visiting health care providers (Gangopadhyaya and Garrett 2020). In addition, because the pandemic has led to the loss of employment, consequences of the failure of insurance are expected to follow and counteract efforts to contain the virus and improve public health (Gangopadhyaya and Garrett 2020).

HYPOTHESES

This dissertation first aims to know whether and to what extent concentrated disadvantages among the counties of three states in the United States, California, Texas, and New York, may influence COVID-19 confirmed cases. Specifically, concentrated disadvantages are analyzed at the county level to better understand an increase in health outcomes based on the compositional makeup of social structural factors. Structural factors such as unemployment, race/ethnicity, marital status, citizenship, disability, and other disadvantages have been cited in the literature as influencing health outcomes (Lewis and Rook 1999; Martin 2009; Umberson 1987). Notably, COVID-19 is a more recent illness that is still unraveling its overall outcomes. In examining the effects in which COVID-19 outcomes may be influenced by such factors individually, this study has reviewed such outcomes using county-level analysis to compare the differences or similarities in social factors that may result in increased COVID-19 cases and/or deaths among the counties.

Critically, prior research on health has examined social structures and their effects on health outcomes. However, only a small area of literature has studied this issue

through longitudinal data analysis at the county level. In attempting to examine an exhaustive representation of the United States, three states were selected for further analysis of two COVID-19 outcomes within their counties; confirmed cases and deaths. Based on previous research, it was expected that such social factors had an overall effect on COVID-19 confirmed cases and deaths on a month-to-month basis.

CHAPTER IV

METHODS

DATA

This chapter explores the five selected databases that were combined to generate the necessary county-level results for this study, the sampling methods applied to test the hypotheses, and the selected advanced data analysis strategies used to generate an adequate discussion of the results.

To address the structural factors and the effects they have on COVID-19 outcomes among three different states beginning in March 2020 through April 2021, this study utilized five data sources: (1) The U.S Census Bureau (2021b), (2) The New York State Health Data (2021), (3) The California Open Data Portal (2020), (4) TDHSS (2021) and (5) The U.S Bureau of Labor Statistics (2021). Using the U.S. Census (2021b) I retrieved social structural factors associated with all the counties located in one of the three states: California, Texas, and New York. My study focused on the counties of each state to explain how structural factors affect COVID-19 outcomes, the number of positive COVID-19 results, and the number of confirmed deaths due to COVID-19 infection.

The U.S. Census is collected by the United States government to provide facts and statistics about the American changing population and its economy (U.S. Census Bureau 2020b). From the U.S. Census Bureau (2021b), I retrieved 11 social structural variables for my study. For this specific study, I retrieved my data from the designated "COVID-19 Resource Hub" where information has been allocated for COVID-19

resource purposes. The allocated COVID-19 Resource Hub is divided into three datasets, housing demographics, economic variables, and social characteristics. This data source is imperative to my study as the majority of the independent variables have been accessed through it.

The outcomes of my study were retrieved from each state's data source where the number of COVID-19 positive cases as well confirmed deaths due to COVID-19 infection are reported daily. Using the New York State Health Data, the California Open Data Portal, and TDHSS, I collected the number of COVID infections as well as the reported deaths due to COVID-19 daily in each of the counties in New York, in California, and in Texas, dating back from March 2020. I accessed only the confirmed positive cases reported on the last day of each month as well as confirmed deaths to COVID-19 reported on the last day of each month. Together, each of the three states had two outcomes that were retrieved from their designated data source. The U.S Bureau of Labor Statistics provides the unemployment rate on a monthly basis per county.

MEASURES

Dependent Variables

The two linear outcome variables in this study are *confirmed positive COVID-19 cases* and *confirmed deaths due to COVID-19*. Both outcomes were measured as time-varying variables. For New York, the dataset used included information on the number of tests of individuals for COVID-19 infection performed in each of the counties in the New York State beginning March 1, 2020. The data is updated daily, reflecting tests completed by 12:00 a.m. eastern time the day of the update. Test counts reflect those

reported to the Department of Health each day. If a single person takes multiple tests a day, it will only be reported once. However, if a single person takes multiple tests on different days, they are each counted as a new case. The New York State Department of Health as well as institutions of higher education record positive tests via the Electronic Clinical Laboratory Reporting System. Confirmed deaths were reported as deaths due to a positive virus test. Likewise, I took the total number of confirmed COVID-19 cases reported and the total number of confirmed deaths due to COVID-19 reported on the last day of each month beginning March 2020 to represent confirmed cases and deaths due to COVID-19 for that specific month for each county in New York. While each day is recorded in the database, only the last day of each month beginning in March 2020 through April 2021 were included in the study.

For California, confirmed COVID-19 cases were measured as the number of new lab-confirmed positive cases reported by local health departments each day beginning March 2020. COVID-19 deaths are also counted based on the cause of death reported on death certificates. For the case to be considered a death due to COVID-19, COVID-19 to be the cause of death or at least a contributing factor to the death. For my study, I retrieved the total number of confirmed COVID-19 cases and confirmed COVID-19 deaths on the last day of each month beginning March 2020 through April 2021 from each county in California to represent confirmed cases and deaths for the specific month.

For Texas, confirmed COVID-19 cases were measured as any person who had tested positive through a molecular test that looks for the virus's genetic material, as reported to the TDHSS. The TDHSS uses the confirmed case definition adopted by the

CDC. Confirmed deaths are considered to be deaths for which COVID-19 is listed as a direct cause of death on the death certificate. A medical certifier, usually a doctor, determines the cause(s) of death. The TDHSS does not include deaths of people who have had COVID-19 at some point but died of an unrelated cause. Deaths are reported by where the person lives as listed on the death certificate. I retrieved the total number of confirmed COVID-19 cases and confirmed COVID-19 deaths on the last day of each month beginning March 2020 through April 2021 from each county in Texas to represent confirmed cases and deaths for the specific month.

Independent Variables

I employed 11 county-level independent variables to measure social structure factors, 10 time-invariant and one-time varying variables. All social structure variables are measured as time-invariant variables except unemployment rate. Social structure factors were retrieved from the U.S. Census Bureau (2021b) and were recorded from 2015 through 2019. Seven sets of these social structural factors include the following. First, “County population size” is the total number of people living in each county as recorded by the U.S Census within the past five years divided by the total population. Second, “Racial/ethnic composition” was examined through the use of three variables: percentage of Whites (reference), percentage of Blacks, percentage of Hispanics, percentage of Asians, and percentage of all other groups (Hawaiian, Guamanian, Samoan, other Pacific Islander, some other race) for each county; each race was taken into account individually and divided by the total population to accumulate percentages. Third, “Percent of married couples" was measured by the percentage of married

individuals who are above the age of 25 for each county multiplied by 100 and divided by the total number of family households. To examine working conditions, “Occupation” and “Industry” were examined as independent variables. In the U.S. Census Bureau (2021b), “Occupation” includes management/business, service occupation, sales and office, natural resources, production/transportation/material moving occupation; “Industry” includes agriculture/forestry/fish, construction, manufacturing, wholesale trade, retail trade, transportation/warehousing, information, insurance/finance, professional/scientific, educational, arts/entertainment, public administration, and other services. Fourth, “Percentage of service workers" measured “Occupation” by adding the total number of reported service workers who are 16 and older and dividing the sum by the total civilian employed population above the age of 16. Fifth, “Percentage of transportation/warehouse workers" was employed to measure “Industry” by using the total number of reported transportation/warehouse workers who are 16 years or older and dividing the sum by the total number of the reported civilian employed population who are 16 years or older. Sixth, “Percentage of citizens' ' was measured by taking the total county population and subtracting the total number of respondents who are not U.S. citizens, multiplying the sum by 100 and dividing it by the total county population. Seventh, “Percentage of disability" was measured by the percentage of households with a reported disability within each county and dividing it by the total county population. Next, “Insurance” was meaured as the total number of respondents with no health insurance, multiplied by 100, and dividing the sum by the total population with health insurance coverage. Next, “Percentage with an associate’s degree or higher” was

computed for all respondents with an associate's degree, a bachelor's degree, and a graduate or professional degree, the sum was multiplied by 100 and divided by the population 25 years or older. To examine "female-headed households," I examined the female households where no husband is present, multiplied the sum by 100, and divided the total by total family households. Further, I included the percentage of households that received food stamps by taking the total number of respondents who reported having been assisted with food stamp benefits within the last 12 months, multiplied the sum by 100, and divided the total by the total family households. In light of high relationships found among different social structural factors as indicated by the literature (Martin 2009), I selected reasonable time-invariant variables to be included in an index referred to as "disadvantage." The disadvantage index was made up of 6 separate computed variables: median family income in dollars, percentage with no insurance, percentage of obtaining at least an associates degree, percentage of female-headed households, percentage with food stamp benefits within the past 12 months, and percentage of Hispanics. The disadvantage index has proved to be reliable (Cronbach's alpha = .841).

Time-Varying Independent Variable

The time-varying independent variable in this study is "monthly unemployment rate." Unemployment rate was taken from the U.S. Bureau of Labor Statistics (2021). The U.S. Bureau of Labor Statistics employs non-survey methodologies for producing monthly estimates of the civilian labor force, employment, unemployment, and the unemployment rate for over 7,500 subnational areas. "Monthly unemployment rate" was measured by the percentage of individuals for each county for each month who do not

have a job, have actively looked for work in the prior four weeks, and are currently available for work, as well as the person who is not working and are waiting to be recalled to a job from which they have been temporarily been laid off (U.S. Bureau of Labor Statistics 2020). For each county within the three states, the total number of unemployed persons each month was retrieved beginning March 2020 until April 2021.

DATA ANALYSIS PROCEDURES

Merging databases

Using county-months as the units of analysis in the present study, I evaluated the hypothesized model first, with the whole sample including counties of all three states and then with all counties of each of the three states. To evaluate the moderating role of the state, I compared the coefficient of each independent variable across the three states. Upon the completion of merging all 5 datasets on SPSS Windows 25.0, data were transferred to STATA for further analysis.

Next, I used descriptive statistics to describe all variables included in the study using SPSS. This dissertation utilized a generalized least squares (GLS) regression model that accounts for random effects to determine if a county's social structure factors (independent variable [IV]) have an association with COVID-19 outcomes (dependent variable [DV]). Since the variables used for this investigation measured 13 months from March 2020 to April 2021, the units of analysis of this study were county-months. The examination of county-level data over time was most appropriate for this study as it examined the changes during this timeframe as it involves counties. Analyses were first

conducted for the entire sample including all counties of all three states. GLS was then applied to explain the COVID-19 outcomes separately for the three states.

I also aimed to evaluate any moderating role that state might have played in the associations of COVID-19 outcomes with social structural factors by taking steps to compare (across the three states) the coefficients measured for each IV. To do so, I used the following procedure: first, I derived a series of interaction terms involving state and each IV; then, I used GLS regression to perform an analysis on each of the COVID-19 outcomes with all IVs as well as the interaction terms. Significant results of these interaction terms indicate a significant moderating role of the state in the explanation of each of the COVID-19 outcomes concerning one of these social structural factors included in the present study.

CHAPTER V

RESULTS OF THE STUDY

This chapter provides both descriptive statistics as well as statistical results to the GLS regression models to evaluate the findings to the hypotheses.

DESCRIPTIVE STATISTICS

The unit of analysis for this study is county-months. There were a total of 374 counties and a total of 13 months included in the analysis. Table 5.1 provides descriptive findings for the three states examined. First, in counties in California, on average, I found 3 percent of residents are Black, 7 percent are Asian, and less than 1 percent are identified as other races. When examining married couples, approximately 74 percent of the counties' total household residents were reported to be married.

Further, 21 percent of the total population above the age of 16 are considered service workers. On average, nearly 5 percent of the total population above the age of 16 are transportation workers in California. Other findings indicated that on average, 91 percent of the overall county population in California are citizens. When examining the disabled population in California, 13 percent of the total county population is considered to be disabled. Lastly, the level of disadvantage was examined through an index made up of the overall total median household income, the total percentage of households with insurance, the total percentage of respondents age 25 or older with an associate degree or

higher, the total percentage of households without a male present, the total percentage of households that have received SNAP (Supplemental Nutrition Assistance Program), better known as food stamps, within the last 12 months, and the total percentage of Hispanics. According to the findings, in California the median household income is $76,930, 8 percent of the total household population does not have any type of insurance, 35 percent of its overall population above the age of 25 have an associate degree or higher, 17 percent of the total percentage of households are identified as female-headed households, and more than 15 percent are reported to have received food stamps (SNAP) benefits within the last 12 months. In addition, 30 percent of the county population in California is Hispanic. The overall county disadvantage level in California is relatively low. It averages 2.4 standard deviation units below the mean generated by all counties included in all three states in this study.

For counties in Texas, 6 percent of the total household population are Black, 4 percent are Asian, and less than 0.2 percent of the total household population in Texas are made up of other races. For married couples in Texas, 76 percent of the total population above the age of 25 are married. For service workers in counties in Texas, 18 percent of the total civilian employed population above the age of 16 are considered to be service workers, and on average, nearly 6 percent of the total civilian employed population above the age of 16 are considered to be transportation workers. The findings indicate that more than 93 percent of the total population in Texas are citizens, and on average, more than 15 percent of the total household population are considered to be disabled. Findings used from items of the disadvantage index indicate that the median household income in Texas

is approximately $62,397; on average, 3 percent of the total household population does not have any type of insurance, 11 percent of the total population above the age of 25 were reported to have an associate degree or higher, approximately 3 percent of the total household population are identified as a female-headed household, and more than 6 percentof the total county population were reported to have received food stamps (SNAP) benefits within the last 12 months. Additionally, on average, 18 percent of the total population in Texas are Hispanic. Using the disadvantage index, the county disadvantage level averages 1.3 standard deviation units above the mean for all counties generated by the three states.

As shown in Table 5.1, on average, I found that approximately 6 percent of the total population in New York are Black, 3 percent are Asian, and less than 0.3 percent are made up of other races. Further, approximately 74 percent of the total population above the age of 25 in New York counties are married. More than 19 percent of the total civilian-employed population in New York are considered to be service workers, and on average, 5 percent of the total civilian-employed population are considered to be transportation workers in New York. The results indicate that on average, 96 percent of the total population are citizens, and on average, 14 percent of New York's total county population are disabled. Results concerning items of the disadvantage index used to examine the level of disadvantage show that on average, the median household income in New York is $75,129. Approximately 6 percent of the total household population in New York do not have any insurance, on average, 39 percent of the total population above the age of 25 have at least an associate degree or higher, approximately 18 percent of the

total household population are identified as female-headed households, 21 percent of the total household population were reported to have received food stamps (SNAP) benefits within the past 12 months, and 8 percent of the total population are Hispanic. The results show that the county disadvantage level averages 3.12 standard deviations below the mean associated with all counties for all three states.

Table 5.1. Descriptive Statistics for Time-Invariant Variables Separated by State

	California		Texas		New York		**Total**		**F**
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Sig.
Ln(County Population)	12.0497	1.8497	9.9021	1.7134	11.7159	1.29713	10.5350	1.91066	**<.000**
Percentage of Blacks	2.9643	2.9150	6.1340	6.5532	5.8116	6.0363	5.5890	6.1374	**<.01**
Percentage of Asian	7.2069	8.2952	1.0661	1.9936	2.8272	4.0098	2.3101	4.5461	**<.000**
Percentage of other	0.0524	0.0400	0.0183	0.0118	0.0246	0.0118	0.0246	0.0225	**<.000**
Percentage of Married Couples	74.7006	4.8863	76.3727	6.5263	74.5143	5.8615	75.8053	6.2324	**<.05**
Service Worker Percentage	20.5464	3.6834	18.3931	4.7553	19.5228	2.9453	18.9143	4.4148	**<.01**
Transportation Worker Percentage	4.9088	1.7935	6.0470	2.3398	4.6430	1.5671	5.6377	2.2288	**<.000**
Percentage of Citizens	90.8813	5.1832	93.3534	6.6729	96.2314	4.6683	93.4472	6.3395	**<.000**
Disabled Population	13.3304	3.9039	15.6193	5.5967	14.4307	7.2674	15.0673	5.7407	**<.01**
Disadvantaged	−2.4241	3.9361	1.3155	4.1431	−3.1217	3.0168	0	4.3830	**<.000**
Percentage of Median Household Income	76.9343	22.1826	−62.3960	13.7325	−75.1281	16.9263	−66.7610	17.0488	**<.01**
Percentage with no Insurance	8.5510	2.9705	21.4252	7.1179	6.0125	2.7821	16.8736	9.0258	**<.000**
Percentage with Associates Degree or higher	−35.7929	11.1869	−25.3100	8.1757	−39.2497	8.1794	−29.2460	10.4523	**<.000**
Percentage of Female-Headed Household	17.2016	3.6298	16.9821	5.4723	17.7706	4.9274	17.1469	5.1361	**<.05**
Percentage with Food Stamps	15.5589	6.3220	18.1007	8.7390	21.2304	7.5493	18.2254	8.3569	**<.01**
Percentage of Hispanics	30.3227	18.0572	34.8351	23.2664	7.7652	9.1559	29.6478	22.9934	**<.000**

Valid N (listwise)	58		254		62		374		

Table 5.2 presents the descriptive statistics for the time-varying variables. For California, the number of confirmed cases shows a mean monthly count of 168.854 and a standard deviation of 786.47. Additionally, the number of COVID-19 related deaths in California shows a mean count of 2.477 per month from March 2020 to April 2021 and a standard deviation of 13.153. For unemployment in California, findings indicate that the monthly rate was 11.075 per one thousand persons per month from March 2020 to April 2021. For Texas, the total number of confirmed cases shows a mean count of 726.62 per month from March 2020 to April 2021 and a standard deviation of 3716.013. The total number of confirmed deaths in Texas indicates a mean monthly count of 70.6 and a standard deviation of 299.488. The unemployment rate in Texas averages 4.13 per one thousand persons per month from March 2020 to April 2021. For New York, findings for the total number of confirmed cases indicate a mean monthly count of 528.002 and a standard deviation of 1485.688. When it comes to confirmed deaths, in New York, there is a mean monthly count of 82 and a standard deviation of 218, and an unemployment rate of 4.769 per one thousand persons per month from March 2020 to April 2021.

Table 5.2. Descriptive Statistics for Time-Invariant Variables Separated by State

	California		**Texas**		**New York**		**Total**		**F**
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Sig.
Confirmed Cases	168.854	786.47	726.62	3716.013	528.002	1485.68	607.195	3143.10	<.000
Deaths	2.477	13.153	70.615	299.488	81.768	218.539	61.8976	263.646	<.000
Unemployment	11.075	80.471	4.13	1.658	4.769	2.079	4.1307	1.6588	<.000

RESULTS FOR GLS REGRESSION

Table 5.3 presents results concerning whether and how social structural factors explain both COVID-19 confirmed cases and deaths among all counties within the three states. A total of 4,862 (374 counties and 13 months) county months were included in the final sample in this study. According to the findings on confirmed cases, counties with a higher level of county population were concluded to have a higher rate of COVID-19 confirmed cases. Further, a higher rate of COVID-19 confirmed cases was found in counties that were reported to have a higher percentage of racial groups other than White, Black, Asian, and Hispanic, and a higher percentage of transportation workers. To add, counties with a higher level of disadvantage on the disadvantage index were indicated to have a lower rate of COVID-19 confirmed cases. On the other hand, counties that had a higher percentage of married couples in their households and a higher percentage of citizens had a lower rate of COVID-19 confirmed cases. Using Texas as the reference group, the results show that rates of COVID-19 confirmed infection were lower in California and New York. Next, to take time into account, I included 12 different time variables in each model. Using March 2020 as the reference group, I found that rates of COVID-19 confirmed cases were higher each month from April 2020 through March 2021 than in March 2020.

Next, COVID-19 total deaths are also presented in Table 5.3. First, counties with a higher population were reported to have a higher COVID-19 death rate. Higher death rates due to COVID-19 were found in counties that were reported to have a higher percentage of racial groups other than White, Black, Asian and Hispanic, as well as a

higher percentage of Asians, and a higher percentage of transportation workers. Interestingly, lower rates of COVID-19 deaths were found in counties with a higher rate of unemployment. Using Texas as the reference group, the results show that rates of COVID-19 related deaths were lower in California and New York. Lastly, in comparing the COVID-19 deaths over time, March 2020 was used as the month of comparison. Findings presented in Table 5.3 indicate that there were higher rates of COVID-19 deaths in April 2020 and May 2020, as well as from September 2020 through March 2021, than there were in March 2020.

Table 5.3. Generalized Least Square Regression Results Explaining COVID-19 Cases and Deaths for Three States in the United States.

	Cases		**Deaths**	
Predictors	b		b	
Unemployment	–0.062		–0.069	*
Ln(County Population)	615.260	**	59.868	**
Percentage of Blacks	19.488		0.976	
Percentage of Asian	–32.348		–4.422	*
Percentage of other	10181.810	**	891.121	**
Percentage of Married Couples	–47.620	**	–2.531	
Service Worker Percentage	2.083		0.922	
Transportation Worker Percentage	87.375	*	6.176	*
Percentage of Citizens	–97.675	**	–8.688	**
Disabled Population	25.264		2.136	
Disadvantaged	–93.187	**	–3.368	
California	–2482.182	**	–224.657	**
New York	–1385.776	**	–79.364	**
Apr-20	113.518	**	–8.243	*
May-20	166.396	**	–14.085	*
Jun-20	351.105	**	–12.762	
Jul-20	786.009	**	–1.242	
Aug-20	594.917	**	14.445	

Sep-20	443.978	**	24.622	*
Oct-20	490.599	**	33.243	**
Nov-20	448.741	**	55.689	**
Dec-20	1653.365	**	96.208	**
Jan-21	1499.694	**	100.197	**
Feb-21	730.160	**	111.901	**
Mar-21	415.036	**	129.217	**
Constant	5687.618	**	340.914	
sigma_u	1808.900		151.239	
sigma_e	2168.126		174.103	
Interclass Correlation rho	0.410		0.430	
Wald chi2	113.920	**	151.290	**
N	4861		4861	

* p < .05; ** p < .01

Table 5.4 shows the results for explaining COVID-19 confirmed positive cases among all counties in California, Texas, and New York. A total of 754 county-months (13 months and 58 counties) were included in the study for the state of California. I found higher rates of COVID-19 confirmed cases in counties in California that had a higher percentage of racial groups other than White, Black, Asian and Hispanic, a higher percentage of citizens as well a higher percentage of both transportation and service workers. I also found that counties with a higher percentage of married couples in their households had a higher rate of COVID-19 confirmed cases. To examine COVID-19 cases overtime from March 2020 to March 2021, I used March 2020 as the reference group. The rate of COVID-19 confirmed cases was significantly higher from June 2020 through March 2021 as compared to March 2020.

In addition, many social structures in Texas were found to significantly influence COVID-19 confirmed cases. According to the findings, there were a total of 3,302 county-months (13 months and 254 counties) included in this study. There was a higher rate of COVID-19 confirmed cases in counties with a higher percentage of the Asian population, a higher percentage of transportation workers, and a higher percentage of the disabled population. On the other hand, counties where there was a higher rate of unemployment, a higher percentage of married couples in the household, a higher percentage of service workers, and a higher percentage of the population with citizenship were associated with a lower rate of COVID-19 confirmed cases. In Texas, more confirmed cases were found from April 2020 through March 2021 than in March 2020.

For New York, significant findings were also determined when it comes to structural factors and COVID-19 confirmed cases. There were a total of 806 county-months (13 months and 62 counties) included in this analysis. First, I found a higher rate of COVID-19 confirmed cases in counties with a higher percentage of the Asian population, a higher rate of unemployment, and a higher disadvantage level. Lower rates of COVID-19 confirmed cases were also found in counties with a higher percentage of the disabled population. From April 2020 through July 2020, there were significantly lower numbers of confirmed cases than in March 2020 in counties in New York. However, from September 2020 through March 2021 there were significantly higher confirmed cases than in March 2020.

To evaluate the complete GLS model, Wald Chi^2 was used to assess whether the model significantly increases the predictability of the outcome, and Rho was used to

determine explained variance of the model. The results show that Wald Chi² was 575.92, 216.2, and 1,109.39 for the COVID-19 confirmed cases model for California, Texas, and New York, respectively. The significant Wald Chi² results confirmed that the hypothesized GLS random-effects model, for each state, differed significantly from the null model ($p < .001$). The interclass correlation results found in Table 5.4 show that about 16.2 percent, 37.8 percent, and 60.3 percent of the variance of the COVID-19 confirmed cases outcome were explained by each of the models for California, Texas, and New York, respectively.

Alongside, I intended to examine the moderating role the state played in the explanation of each outcome. In doing so, interaction terms were utilized to evaluate whether the outcome's associations with specific social structural factors are stronger for one state than for another.

Using Texas as the reference group, I found a total of 12 significant interactions. Significant interactions are signified by the bold-faced figures in Table 5.4. The results show that while the unemployment rate was inversely related to the rate of COVID-19 confirmed cases in Texas, the unemployment rate was positively associated with New York, and no relationship was found between the unemployment rate and the rate of COVID-19 confirmed cases in California. The unemployment rate and COVID-19 confirmed cases relationship found in Texas was significantly stronger than in New York and California. The county population was found to be positively related to COVID-19 confirmed cases for both California and Texas. However, such a relationship was significantly stronger in Texas than in California. Next, the findings indicate that in

Texas, the percentage of Asians is positively associated with COVID-19 confirmed cases and the relationship found in Texas was significantly stronger than in California. No significant relationship between the percentage of Asians and COVID-19 confirmed cases were found in California.

Furthermore, the percentage of married couples in county households was found to be negatively related to COVID-19 confirmed cases in Texas but positively related to COVID-19 confirmed cases in California. Such a relationship was significantly stronger in Texas than in California. The percentage of transportation workers was positively related to COVID-19 confirmed cases in both Texas and California. However, such a relationship was found to be significantly stronger in Texas than in California. Further, while the percentage of the population with citizenship was inversely related to the rate of COVID-19 confirmed cases in Texas, there was not a significant relationship found in California and the relationship was significantly stronger in Texas than in California. The percentage of the disabled population was found to be positively related to COVID-19 confirmed cases in Texas. The percentage of disabled population and COVID-19 confirmed cases relationship was found to be significantly stronger in Texas than in California and New York. Finally, while no statistical significance was found between disadvantage and COVID-19 cases in Texas, in New York, disadvantage level was positively associated with COVID-19 confirmed cases. The relationship was significantly stronger in New York than in Texas.

Table 5.4. Generalized Least Square Regression Results Explaining COVID-19 Cases for Three States in the United States.

	California		Texas		New York	
Predictors	b		b		b	
Unemployment	**0.131**		**–407.238**	**	**285.394**	**
Ln(County Population)	**216.352**	**	**804.14**	**	–27.115	
Percentage of Blacks	1.916		7.262		57.569	
Percentage of Asian	**–4.988**		**308.88**	*	153.537	***
Percentage of other	698.046	*	–8113.832		–10863.49	
Percentage of Married Couples	**28.54**	*	**–48.746**	*	49.184	
Service Worker Percentage	**27.524**	*	**–51.32**	*	**10.138**	
Transportation Worker Percentage	**77.855**	*	**123.776**	*	41.66	
Percentage of Citizens	**–17.844**		**–89.278**	***	–58.125	
Disabled Population	**15.285**		**57.471**	***	–24.385	*
Disadvantaged	**18.217**		**–24.655**		**147.573**	**
April 2020	4.261		974.606	**	–1255.745	**
May 2020	19.88		1038.705	**	–630.16	*
June 2020	146.068	**	1239.321	**	–511.247	*
July 2020	90.999	*	1760.68	***	–538.631	*
August 2020	42.562	**	969.356	***	–78.041	
September 2020	31.567	**	992.012	**	339.677	***
October 2020	56.488	**	897.977	***	437.242	**
November 2020	189.268	*	832.342	***	411.306	**
December 2020	1032.321	**	2384.158	***	371.55	**
January 2021	245.0282	**	2448.437	***	350.732	**
February 1	27.332	***	1401.026	***	367.429	**
March 2021	17.194	***	853.604	**	525.747	**
Constant	–410.099	**	4393.584		1350.572	
sigma_u	285.456		2003.3519		519.078	
sigma_e	646.864		2566.4363		421.24	
Interclass Correlation rho	0.162		0.378		0.603	
Wald chi^2	575.92		216.2		1109.39	
N	753		3,302		806	
* p < .05; ** p < .01						

Note: Bold-faced, underlined figures signify significant interaction effects involving ethnicity and the independent variable.

Table 5.5 provides the GLS results explaining COVID-19 deaths for California, Texas, and New York separately. Beginning with California, counties in California with a higher level of disadvantage were associated with a higher rate of COVID-19 deaths. To examine COVID-19 related deaths over time, I used March 2020 as the reference. As indicated in Table 5.5; there were more COVID-19 deaths from June 2020 through March 2021 as compared to March 2020.

For Texas, higher rates of COVID-19 deaths were found in counties to have a lower rate of unemployment, a lower percentage of service workers, a lower percentage of the population with citizenship, and a higher percentage of the disabled population. When examining the COVID-19 deaths rates over time, again, March 2020 was used as the month of comparison. According to Table 5.5, in counties in Texas, from April 2020 through February 2021 there was a reported higher rate of COVID-19 deaths as compared to March 2020.

Finally, social-structural factors in New York were analyzed to examine COVID-19 confirmed deaths. According to the findings, COVID-19 death rates were higher in counties with a lower rate of unemployment, a higher percentage of transportation workers, a lower percentage of citizens, and a higher level of disadvantage. Furthermore, COVID-19 deaths over time were examined by using March 2020 as the month of comparison. Each month from April 2020 through March 2021 had a higher percentage of COVID-19 deaths than in March 2020 with few exceptions. In September 2020 and October 2020. In addition, rates of COVID-19 related deaths were comparable in March 2020 and in November 2020.

Using Texas as the reference group, I found a total of seven significant interaction terms for COVID-19 death rates. Significant interactions are signified by the bold-faced figures in Table 5.5. The results show that although unemployment was inversely related to COVID-19 death rates in Texas; there was no significant relationship between the unemployment rate and COVID-19 related death rate in California. The relationship between unemployment and COVID-19 deaths was significantly stronger for Texas than in California. The county population was positively related to COVID-19 death rates in Texas but significant results were not found in California. Such a relationship was significantly stronger in Texas than in California. Moreover, service workers were inversely related to COVID-19 deaths in Texas while the relationship was not significant in California. The percentage of transportation workers was not significantly related to COVID-19 death rates in Texas, yet, the relationship was significantly related to COVID-19 death rates in New York. Such a relationship was significantly stronger in New York than in Texas. The percentage of the population with citizenship was inversely related to COVID-19 death rates in Texas but there was no significant relationship between citizenship and COVID-19 death rates in California. Such a relationship was stronger in Texas than in California.

Table 5.5. Generalized Least Square Regression Results Explaining COVID-19 Deaths for Three States in the United States.

	California		Texas		New York	
Predictors	b		b		b	
Unemployment	–0.001		–51.728	**	–76.774	***
Ln(County Population)	3.423		89.166	***	76.014	**
Percentage of Blacks	0.125		–0.451		6.038	
Percentage of Asian	–.156		14.176		3.646	

Percentage of other	8.089		–1405.500		–1736.122	
Percentage of Married Couples	0.294		–1.568		5.438	
Service Worker Percentage	0.514		–5.190	*	1.152	
Transportation Worker Percentage	1.429		7.309		26.675	***
Percentage of Citizens	–0.400		–7.550	***	–18.108	**
Disabled Population	0.341		4.709	***	–2.836	
Disadvantaged	0.089	**	7.440		14.683	*
April 2020	1.318		115.896	**	362.849	***
May 2020	0.265		121.815	**	178.493	***
June 2020	1.367	***	120.544	**	151.493	***
July 2020	2.314	***	120.434	**	163.362	***
August 2020	0.295	***	77.850	***	41.585	**
September 2020	1.367	***	121.242	***	–60.701	***
October 2020	0.587	***	110.589	***	–69.578	***
November 2020	0.206	***	127.615	***	23.402	
December 2020	7.553	***	149.360	***	187.981	***
January 2021	5.565	***	201.902	***	97.841	***
February 2021	4.115	***	234.324	***	72.772	***
March 2021	2.380	***	241.212		82.567	***
Constant	–48.051	***	73.312		737.192	
sigma_u	6.946		170.173		49.736	
sigma_e	10.524		191.081		131.429	
Interclass Correlation rho	0.303		0.442		0.125	
Wald chi^2	111.91		207.85		1257.59	
N	753		3302		806	
* p < .05; ** p < .01						

Note: Bold-faced, underlined figures signify significant interaction effects involving ethnicity and the independent variable.

CHAPTER V

DISCUSSION

This study aimed to gain an empirical understanding of the role that social structures may play in health, mainly COVID-19. In doing so, this study aimed at contributing to the literature on Fundamental Cause Theory and Social Disorganization Theory. Three research questions guided this study: (1) how structural factors on the county-level influence, if at all, COVID-19 confirmed cases among three states in the United States, (2) how structural factors on the county-level influence, if at all, COVID-19 deaths in each of the three states (Texas, New York, and California) in the United States, each being located in distinct geographic locations from each other, and (3) whether state play a moderating role in social structures and COVID-19 health outcomes.

This chapter reviews the three most significant contributions to the literature by providing insight into the findings consistent with the two theories used to develop the explanatory model for the study. There are three significant implications from this study that are worthy of further discussion. This dissertation's first implication provides insight into whether and how the social structural factors used in this study help explain the COVID-19 outcomes in this country. By doing so, 11 main social structural factors were assessed to better understand the COVID-19 health outcomes. These structural factors were derived from two theories: Fundamental Cause Theory and Social Disorganization Theory. In addition, the findings contribute to the two theories that guide the model of

this study. Discussion on how the findings contribute to the literature on Fundamental Cause Theory and Social Disorganization Theory is raised.

Second, a significant contribution of this study includes examining the unique patterns of social structural factors that may explain each of the two COVID-19 outcomes for each of the three states. Intentionally, I chose three states that (1) had a higher population density, as compared to other states in the United States, (2) are located in very different geographic areas that are apart from each other, and (3) the racial and ethnic makeup of the three states are diverse. According to the World Population Review (2021a), California is the most diverse state in the United States, followed by Texas as second, and New York was ranked the fifth most diverse state. Considering these three components in selecting the states in the examination allowed for discussion of the differences and similarities among the three states regarding social, political, and economic standing that could explain the outcomes presented.

The third implication of the results furthers the understanding of the role of the state in moderating COVID-19 outcomes' associations with each of the included social structural factors. By applying the use of statistical interactions, this dissertation provides insight into how the relationship between each of the outcomes and each of the structural factors behave differently across all three states to be able to initiate a comparable analysis.

IMPLICATION 1

First, this study aimed to examine whether and how social structural factors help explain COVID-19 outcomes in this country. This was done by examining three states all

together and how county-level social structural factors explain COVID-19 outcomes overall. In doing so, the findings indicated higher rates of COVID-19 confirmed cases in counties with a higher county population, a higher percentage of other racial groups other than Whites, Blacks, Asians, and Hispanics, and a higher percentage of transportation workers. However, lower rates of COVID-19 confirmed cases emerged in counties with a higher percentage of married households, a higher percentage of citizens, and higher levels of disadvantage. For deaths, findings identified there were higher rates of COVID-19 deaths in counties with higher populations, a higher percentage of racial groups other than Whites, Blacks, Asians, and Hispanics, a higher percentage of transportation workers. Counties with lower rates of COVID-19 deaths were found in counties that had lower unemployment rates, a lower percentage of Asians, and a lower percentage of citizens. Possible explanations for these findings are discussed.

As stated in Table 5.3, among the three states included in the study, counties with a higher unemployment rate were found to have a lower rate of COVID-19 deaths. Typically in the literature, unemployment is an indicator of lower SES (Cockerham 2017; Link and Phelan 1995; Phelan and Link 2013). Yet, this was not found to be true when examining COVID-19 confirmed cases and outcomes overall. The findings are inconsistent with the literature regarding unemployment and health outcomes (Kerns et al. 2020; Link and Phelan 2010; Parola and Marcionetti 2021; Vancea and Utzet 2017). Since COVID-19 is an infectious disease that can be spread through physical contact (CDC 2021), unemployment during the surge of this illness was found to decrease death rates. Parola and Marcionetti (2021) found that persons who worked from home were less

likely to contract the virus and had lower rates of mortality. That said, the ability to remain away from public spaces increased better health outcomes throughout the quarantine (Parola and Marcionetti 2021). This being the case, it is possible that unemployment had a similar effect. While unemployment differs from remote working through financial means, much of the unemployment rate throughout the pandemic increased due to governed mandates requiring businesses to close with the hopes that less physical interaction would prevent the continued spread of the virus and improve overall health outcomes through a decrease in physical contact. For Phelan and Link (2013), financial capital was a key component to positive health outcomes. Yet, the results indicate that in the matter of COVID-19 and its unique circumstances, that may not necessarily be the case. Instead, the findings indicated that limited proximity to others due to unemployment, exceeds income factors with a rapid infectious disease like COVID-19.

Moreover, Table 5.3 indicates that the county population is an essential factor in explaining COVID-19 confirmed cases and deaths. Counties with a higher population were found to have a higher rate of COVID-19 confirmed cases and deaths. This finding is consistent with the literature on population density and poor health outcomes (Mays et al. 2004). As stated by Sampson and Groves (1989), population density decreases collective efficacy, increasing the crime rate. For health in particular, according to the literature, areas that are considered to be more populous and crowded tend to be in lower socioeconomic communities (Mays et al. 2004). Thus, it is likely that such areas may

increase physical contact, increasing the likelihood of contracting the virus and leading to death.

In addition, overall, racial composition was a significant factor in COVID-19 deaths only. As seen in Table 5.3, counties with a higher percentage of Asians had lower rates of COVID-19 deaths overall. These interesting findings point to the differences in racial and ethnic composition and their effects on health outcomes. Frequent literature on health has indicated that the Asian population is often faced with perceived discrimination and is challenged with unique health outcomes (Hahm et al. 2010). For illnesses such as diabetes, cancer, and high blood pressure (Mui et al. 2017), consistent findings indicate that Asian Americans are burdened with disparities that are often overlooked (Mui et al. 2017). One main reason is due to heterogeneity of subethnic groups within the Asian community, often masking differences in the prevalence and risk of chronic health conditions among Asian Americans (Hastings et al. 2015). Yet, the findings indicate that the counties with higher rates of Asians have lower rates of COVID-19 deaths. Like past findings on Asian populations and health have indicated, it is possible that heterogeneity within Asian subgroups can present a misleading depiction of how the pandemic is affecting the Asian population.

On the other hand, the results showed that in counties with a higher percentage of racial groups other than White, Black, Asian and Hispanic, there were higher rates of COVID-19 confirmed cases and deaths. To measure other racial groups in the study, I included Hawaiian, Guamanian, Samoan, other Pacific Islander, and reported it as “some other group.” According to the literature, these racial groups are some of the groups

considered to be Indigenous (Gracey and King 2009; Lavellee and Poole 2010). The literature has stated that Indigenous persons and members of many ethnic minority groups share common challenges (Lavallee and Poole 2010; Peiris, Brown and Cass 2008). These include a shared history of exclusion and discrimination and a greater likelihood of living in poverty (Peiris et al. 2008). Additionally, both ethnic minorities and Indigenous groups are challenged with lower levels of education and poor health (Jacklin et al. 2017).

For percentages of married households, the results show that counties with a higher percentage of married households had lower rates of COVID-19 cases. These findings raise discussion on social support and health outcomes. This finding was consistent with the argument Fundamental Cause Theory maintains regarding social support. According to the literature on social support (Hatzenbuehler, Phelan, and Link 2013; Sherbourne and Hays 1990), married persons tend to be healthier physically and mentally than unmarried persons. Another study stated that support, such as marriage, can be beneficial since it may improve psychological well-being (de Brito et al. 2017). Therefore, COVID-19 resourcefulness may explain the positive relationship between COVID-19 outcomes and the percentage of the married population. Specifically, marriage can increase the likelihood of access to insurance and other resources that could improve health (de Brito et al. 2017; El-Zoghby, Soltan, and Salama 2020).

Other significant findings in the overall model pertain to occupation. While there is no relationship between the percentage of service workers and the county's overall COVID-19 outcomes, the findings suggest that counties with a higher percentage of

transportation workers were reported to have higher rates of both COVID-19 confirmed cases and deaths. Medical literature has frequently mentioned that occupation can influence health outcomes due to the health risks that may be associated with the job description (Tannis et al. 2020). With COVID-19, much of the influx of cases were found in jobs that required a high volume of physical contact and occupations that were considered "essential" during the quarantine mandate and required their employees to continue to work (CDC 2021a). Findings on the top occupations to have an increase in COVID-19 cases were service workers and transportation workers (CDC 2021b). According to Fundamental Cause Theory, it is stated that fundamental social causes include having limited access to resources that may otherwise allow for the prevention of risk factors and/or minimize consequences of disease (Phelan and Link 2013). Therefore, it is arguable that the risk from physical contact associated with jobs such as transportation workers increases the likelihood of contracting and spreading the virus.

Moreover, findings regarding citizenship within the three states indicated that there were lower rates of COVID-19 confirmed cases and deaths in counties with higher percentages of citizens. These interesting findings may be explained by reviewing the literature regarding non-citizens within these three states. California is recognized as the home of the largest number of immigrants in the United States (American Immigration Council 2020). Immigrants in California now make up one-quarter of the state's population and comprise one-third of the entire labor force (6.6 million), specifically in farming and industry (American Immigration Council 2020). In Texas, immigrants account for one-sixth of the overall population (American Immigration Council 2021). In

2018, Texas was home to 4.9 million immigrants, also playing an integral part of the Texas workforce, with the majority working in labor forces such as construction, transportation, and food preparation (U.S. Census Bureau 2021d). For New York, immigrants account for nearly one-quarter of the state's total population and one-fourth of its labor force (2.8 million). According to the U.S. Census Bureau (2021b), immigrant workers were most numerous in healthcare, food services, retail and transportation, and warehousing. Together, all three states make up a vast majority of the country's overall immigrant population, most of which labor in industries is considered "essential." Arguably, explaining the decrease in COVID-19 poor outcomes among citizens.

The final structural factor found to be significant in the overall model examining all three states is the level of disadvantage. Unexpectedly, the results indicate that counties with a higher level of disadvantage were reported to have lower rates of COVID-19 confirmed cases. The disadvantage index was made up of 6 variables that the literature typically borrows as a way of measuring disadvantage (Kotlaja 2020; Sampson and Groves 1989); total percentage of median household income, total percentage of the county population with no insurance, total percentage of the population above the age of 25 with at least an associate degree, percentage of female-headed households, total percentage of the population that has received food stamp benefits, and the total percentage of the population who are Hispanic. The findings were not consistent with past medical illnesses in the literature (Cockerham 2017; Rydland, Solheim, and Eikemo 2020). According to the literature on health disparities, it was determined that poverty level was found to be a consistent indicator of poor health outcomes. Specifically, lower

SES households were more likely to face health challenges, such as heart disease, diabetes, cancer, and less likely to have the adequate resources to address health matters (Cockerham 2017; Mirowsky and Ross 2015). Yet, the results indicate that this may not be the case when discussing COVID-19 outcomes. Therefore, further research must be considered to examine the differences between this illness and other illnesses that may bring such unique results.

Lastly, I examined COVID-19 confirmed cases and deaths within a year's time frame. In doing so, I retrieved cases beginning in March of 2020. According to the CDC (2021a), the first cases in the United States were reported at the beginning of 2020. By March 2020, the virus was officially recognized as a worldwide pandemic (CDC 2021a), marking the beginning of mandates restricting traveling, schooling, working, and requiring the use of masks in all public settings (CDC 2021a). However, at the beginning of 2021 vaccine distribution aimed to end the virus's spread (AJMC Staff 2021). By March 2021, more than 93.6 million vaccine doses had been administered (AJMC Staff 2021). During this period, developments continued, with some states lifting mandates and allowing for 50–100 percent capacity in public businesses. From the findings regarding the development of the virus over time mentioned in Table 5.3, two main findings emerged that allow for discussion regarding Fundamental Cause Theory. First, using March 2020 as the month of reference, there were higher rates of COVID-19 confirmed cases every month beginning in April 2020 through March 2021.

Additionally, using March 2020 as the month of reference, there were lower rates of COVID-19 deaths in April 2020 and May 2020, yet, from September 2020 through

March 2021, the COVID-19 death rates surpassed the rates in March of 2020 after controlling for all social structural factors. Although the increase in the distribution of vaccination did not occur until February 2021 (AJMC Staff 2021), many mandates were implemented to prevent the spread of the virus, yet, the results did not determine a decline in confirmed cases nor deaths. Phelan and Link (2013) described that lack of knowledge and understanding often results in poor health consequences. Due to the limited information being disseminated, it is possible that it could have prevented better health outcomes immediately after vaccination.

IMPLICATION 2

Expected results confirm both theories about structural disadvantages, even in the matter of an illness that has developed within a short timeframe. The results were unique in examining social structural factors to explain COVID-19 outcomes in each of the three states individually. In doing so, they can get a more clear depiction of the most significant social structures within each state that could assist in explaining COVID-19 outcomes. According to the findings, each model was found to have specific factors that contributed to the COVID-19 effects reported in that state. Specifically, some social structural factors were found to be more relevant to COVID-19 outcomes in one state than another.

For California, many significant findings emerged. Important social structures included unemployment, county population, racial composition, percentage of married households, percentage of service workers, percentage of transportation workers, and county level of disadvantage. The findings in California indicated that county population

was a factor in explaining COVID-19 confirmed cases, yet it was not significant when attempting to explain death. Many reasons may explain these findings. California has a unique geographic location that must be taken into consideration. According to the World Population Review (2021c), California is one of the most populous states in the United States. In addition, it is considered one of the top diverse states with a variety of cultures, economies, ethnicities, and political standings (World Population Review 2021c). Counties on the northside of California were republican in the 2020 election, where millions of immigrants reside (Public Policy Institute of California [PPIC] 2021a). In the rural north, Lassen County, the county with the widest margin of residents who voted for Trump in 2020 in the United States, public health measures like mask-wearing are not as likely (PPIC 2021a). Generally, residents of rural areas are more likely to have a higher prevalence of chronic illness, smoking, and obesity, which could increase the susceptibility of COVID-19 (Hartley 2004). However, the overall resources and health care facilities may help avoid having these confirmed cases become deaths.

Further, the racial composition was only a significant factor when explaining COVID-19 confirmed cases; however, there was no significance when attempting to explain death. Specifically, counties with a higher percentage of other racial groups besides Whites, Blacks, Asians, and Hispanics, were found to have higher rates of COVID-19 confirmed cases. As mentioned previously, California is recognized as a top state in diversity (World Population Review 2021c). Located in a region in the United States where migration is frequent, it is home to large tribal communities and other Indigenous people (World Population Review 2021c). This, along with the jobs these

racial groups are likely to occupy, may explain these findings. California is a hub for millions who labor in farms, meatpacking plants, and other food processing facilities where countless migrant workers of color are exposed to COVID-19 at rates higher than those who could work from home (U.S. Census Bureau 2021b).

Similar findings were found to be true for the percentage of married households, total percentage of service workers, and total percentage of transportation workers, all of which were factors that were significant in explaining the outcome of confirmed COVID-19 cases.

Interestingly, none of those factors contributed to explaining COVID-19 death rates. Social Disorganization Theory argues that structurally disadvantaged neighborhoods are often characterized by extreme levels of poverty such as low-income households, single-parent households, racial and ethnic heterogeneity, and residential mobility, and each are likely to lead to higher rates of crime (Bursik and Grasmick 1993; Weisburd, Groff, and Yang 2014). The only factor that played an imperative role in explaining COVID-19 death rates was the level of disadvantage. The disadvantage index consists of six indicators intended to measure poverty. Thus, arguably, counties with an increased poverty level have a higher rate of COVID-19 death rates. Similar to the argument made by Social Disorganization Theory, these findings point to how significant the role of structural disadvantage may contribute to overall outcomes in both health and crime. According to the PPIC (2021b) the California Poverty Measure (CPM) indicates that more than a third of Californians live in or near poverty. In California, poverty remains higher among children, seniors, Latinos, and less-educated adults (PPIC 2021a).

For Texas, several social structural factors were found to be significant in explaining COVID-19 confirmed cases and deaths. The model explaining COVID-19 health outcomes for Texas includes structural factors such as unemployment, county population, racial composition, percentage of married households, percentage of service workers, percentage of transportation workers, total percentage of citizens, and percentage of the disabled population. While several structural factors significantly explain COVID-19 outcomes in Texas, they do so in a unique manner. For example, in Texas, unemployment had a significant inverse negative relationship for COVID-19 confirmed cases and deaths. According to the CDC (2020b), by March 2020, the number of Texans filing for unemployment jumped by 860 percent due to the pandemic. Thus, a vast majority of Texans were no longer at risk of physical contact, which may have helped with the health outcomes.

Interestingly, findings present that the percentage of service workers had a significant negative relationship to COVID-19 confirmed cases and deaths. This suggests that counties with a higher percentage of service workers were found to have lower rates of COVID-19 confirmed cases and deaths. However, unexpected findings indicate a significant positive relationship among counties with a higher percentage of transportation workers. These unexpected findings raise the discussion on whether the type of occupation may play a role in health outcomes. According to the Texas Workforce Commission (2021), service workers had a decline in unemployment during the pandemic, which led many laborers within these occupations to be home and away from the risk of contracting the virus. However, the unemployment rate remained consistent

for transportation workers as many transportation occupations were considered "essential," potentially leading to poor COVID-19 health outcomes (Texas Workforce Commission 2021).

Other findings point to how citizenship explains COVID-19 outcomes in Texas. The results state that there were lower rates of COVID-19 confirmed cases and deaths in counties with a higher percentage of citizens. This is consistent with the literature on citizenship and health. Citizenship reflects a privileged position in the United States. and allows more access to resources such as a higher likelihood of financial capital and insurance (CDC 2021c).

Lastly, there was a positive relationship between the disabled population and COVID-19 confirmed cases and deaths. Counties with a higher rate of the disabled population had higher rates of COVID-19 cases and deaths. This is consistent with the literature that argues that this population is subject to an increase in health disparities due to their social standing, particularly SES, and their increased risk of being subjected to contracting the virus because of close physical contact due to their likelihood of living in congregate residential settings and/or residing with others who could assist with needs (Rotarou et al. 2021). According to Fundamental Cause Theory, low SES results in poor health outcomes due to the lack of resources, knowledge and limited resources that could increase risk factors. This may be the case for the disabled population in Texas that tends to have higher rates of COVID-19 cases and deaths.

In New York, several social structural factors require further elaboration. Significant social structural factors that explained COVID-19 confirmed cases and deaths

included unemployment, racial composition, percentage of transportation workers, percentage of citizens, disabled population, and level of disadvantage. For New York, counties with a higher unemployment rate were found to have a higher rate of COVID-19 confirmed cases. However, in counties with a higher rate of unemployment there were lower rates of COVID-19 deaths. This opposite effect indicates that unemployment does not have the same impact on the possibility of contracting the virus as it does when mortality is discussed. However, this may point to the geographical position of the state itself. In particular, New York has the most crowded city in the United States, New York City (World Population Review 2021b). The population density could contribute to the increased confirmed cases found to be significant within counties with a higher unemployment rate. Yet, when examining deaths in New York, counties with a higher unemployment rate had lower rates of COVID-19 death. These findings may be due to the increased resources and health care facilities found in New York, leading to lower death rates.

Other interesting findings involve racial composition. According to the results in the study, none of the racial groups examined were found to be significant factors in explaining COVID-19 health outcomes in New York except counties with a reported higher percentage of Asians who were found to have higher rates of COVID-19 confirmed cases. This reasoning is uncertain yet raises questions regarding the access, or lack thereof, to resources that increase the possibility of contracting the virus within select racial groups. Interestingly, when examining the disabled population, it was determined that counties with a higher percentage of the disabled population had lower

rates of COVID-19 confirmed cases. This unexpected finding contradicts the literature on disability and health disparities (Reichard, Stolzle, and Fox 2011). Frequent literature has stated that disabled populations have a higher prevalence of becoming ill from chronic and infectious diseases due to their proximity with others and their increased likelihood of being socially and economically disadvantaged (Reichard et al. 2011). However, the findings prove that that may not always be the case, specifically when attempting to explain COVID-19 outcomes in New York. This furthers the discussion that COVID-19 may be unique in its effects on marginalized communities as compared to health outcomes in other illnesses and diseases.

Lastly, consistent with the literature, counties with higher levels of disadvantage were found to have higher rates of COVID-19 confirmed cases and deaths. As mentioned in Social Disorganization Theory (Samson and Groves 1989), neighborhoods with extreme levels of poverty have an expected higher rate of crime, mainly due to the increase in disorganization. Geographically, as mentioned previously, New York's population density exceeds any state in the United States (World Population Review 2021b), increasing its probability of disorganization, as stated in Social Disorganization Theory (Samson and Groves 1989). Thus, maintaining that nested poverty may increase health disparities within those concentrated poverty areas (Cantillon, Davidson, and Schweitzer 2003; Kingston, Huizinga, and Elliot 2009)

IMPLICATION 3

Implication 3 provides an outlook on the geographical, political, economic, and social differences that each state may have, affecting the social structural factors'

involvement in explaining the COVID-19 health outcomes. Using the same measures, social structures proved to have operated uniquely in different states when examining a timely health matter. In reviewing the moderating role that state played in each COVID-19 outcome's association with social structural factors, I compared the relationship between each of the COVID-19 outcomes and every social structural factor across the three states. As shown in Tables 5.4 and 5.5, many COVID-19 outcomes' associations with several predictors differ across the three states.

The unemployment rate did not have the same effect on COVID-19 outcomes across all three states. While the unemployment rate was not found to be significant in California, for Texas, there was an inverse relationship between the unemployment rate and COVID-19 confirmed cases and deaths. In other words, in Texas counties where there was a higher rate of unemployment, there were lower rates of COVID-19 confirmed cases. However, in New York, there was a positive relationship between the unemployment rate and COVID-19 confirmed cases and deaths. Thus, counties with a higher unemployment rate were found to have higher rates of COVID-19 confirmed cases. To explain these findings, I examined each state's political standing that could explain these results. First, as mentioned previously, in Texas, the decrease in employment that occurred throughout the pandemic had a positive effect on health outcomes, which may be due to the limited physical contact that being at home allowed for.

Throughout the pandemic, many concerns in Texas derived from the push back on mask-wearing and individual rights to choose to wear them (Markowitz 2021).

According to one study (Markowitz 2021), Texans wear masks at lower rates than the national average. In this study, it was determined that 63 percent of Texans indicated that they “always” or “often always” wear masks, while the national average indicates 67 percent report “always” or “often always” wearing masks (Markowitz 2021). Texans were found to wear masks far less than people residing in larger states, including Florida (71 percent), California (84 percent), and New York (85 percent). To add, in Texas state surveys found that 22 percent of Texans believed mask-wearing is not important in restaurants, 18 percent say that mask-wearing in bars is not important, and 13 percent believed that mask-wearing in stores and malls is not important (Markowitz 2021).

On the other hand, for New York, results were consistent with past findings regarding other health illnesses and unemployment. These same matters may explain other significant findings in this study. For example, the county population was positively related to COVID-19 confirmed cases in Texas and New York, yet, the effect county population had on COVID-19 confirmed cases was much stronger in Texas. This finding may result from the political standing each state is met with, including survey findings that indicated that Texans believed wearing masks was less important than residents in California believed (Markowitz 2021). Considering that the primary route of COVID-19 transmission is via respiratory droplets (Howard et al. 2021), research suggests that wearing masks reduces transmissibility and is most effective at reducing the spread of the virus (Howard et al. 2021).

Additionally, similar findings emerged when examining the role of social support, as measured through the percentage of married households, provides a significant

difference between California and Texas when reviewing the rate of COVID-19 confirmed cases. In California, counties with a higher percentage of married households had a higher rate of COVID-19 confirmed cases. However, in Texas, counties with a higher percentage of married households were found to have a lower rate of COVID-19 confirmed cases. There are several reasons as to why these discrepancies may emerge. Literature often uses marriage as a means to measure social support and is likely to result in better health outcomes due to a higher household income, better access to health insurance, and overall more access to resources that could prevent the risk of illnesses (Lawrence et al. 2019).

Other interesting findings include how unique each social factor operates in explaining COVID-19 outcomes within the disabled population in each state. In particular, the results show that the impact of the percentage of the disabled population on COVID-19 outcomes was different for Texas and New York. In Texas, counties with a higher percentage of the disabled population had to have a higher rate of COVID-19 confirmed cases. In New York, the opposite applied—in counties with a higher percentage of disabled populations, there were lower rates of COVID-19 confirmed cases. According to a study by Syracuse University (2020), individuals with intellectual and developmental disabilities may be at a higher risk of poor COVID-19 health outcomes for three main reasons: 1) individuals with an intellectual and developmental disability are typically more likely to be a socially disadvantaged population that tend to experience higher levels of health disparities (Goggin and Ellis 2020; Rotarou et al. 2021; 2) individuals with intellectual and developmental disabilities have a higher prevalence of

illnesses such as pneumonia, which is a respiratory infection identified as possibly increasing the likelihood of COVID-19 infection as well as severe outcomes (Goggin and Ellis 2020); and 3) individuals who with an intellectual and developmental disability are more likely to reside in congregate settings that may present challenges to physically distance and prevent the spread of the virus (Goggin and Ellis 2020; Rotarou et al. 202). Thus, according to the findings, for COVID-19, there are significant findings to the outcomes among disabled populations compared to past illnesses. While Fundamental Cause Theory and Social Disorganization both argue that marginalized populations face higher rates of disparities, whether through health or crime, the results suggest that for COVID-19 outcomes among this population, this does not hold. It is possible that because of the uniqueness of the virus and it being an infectious disease rather than a chronic disease, as much of the past literature notes, disabled communities are not affected in the same way.

Lastly, the effects of level of disadvantage on COVID-19 health outcomes within the three states differ significantly. Specifically, in New York, the level of disadvantage has a positive association to COVID-19 confirmed cases while no relationship was recorded between disadvantage age level and COVID-19 confirmed cases. In addition, for New York, this structural factor has a stronger effect in explaining COVID-19 confirmed cases than for Texas. Economic positions may explain these findings. According to the U.S Census Bureau (2021c), in 2019, 16 percent of New York's population lived below the poverty line, while only 13.6 percent of Texas'

population lived below the poverty line (U.S. Census Bureau 2021c). The state as a whole may be an important environment that can endorse significant preventative measures to help residents with poor health outcomes regardless of SES. For New York, the better control of the virus could essentially point to the disadvantages that may surface as more important factors in explaining confirmed cases. In Texas, the relatively less control and preventative measures imposed by the state may increase a residents' risks for COVID-19 and reduce the negative impact of disadvantage on specific illnesses.

SUMMARY

This dissertation attempted to address whether and if so, how social structural factors affect COVID-19 confirmed cases and death rates on the county level in three states in the United States. In doing so, I examined California, Texas, and New York. My model was based on two theories concerning the importance of social structures: Fundamental Cause Theory and Social Disorganization Theory. In the present study, such social structural factors include unemployment, county population, racial composition, percentage of service workers and transportation workers, percentage of citizens, percentage of the disabled population, and county level of disadvantage.

The overall results indicate that while many social structural factors influence the infectious disease COVID-19, the ways they influence each state's outcomes differ. First, overall among all three states, unemployment was found to be a significant factor in explaining COVID-19 death rates. Furthermore, among all three states I found higher rates of confirmed COVID-19 cases in counties with a larger county population and with a higher percentage of racial groups other than White, Black, Asians, and Hispanic.

When examining the death rate among all three states, I found the same significant results for county population and racial composition for COVID-19 confirmed cases. To add to these findings, counties with a higher percentage of Asians had lower rates of death.

Further results indicate that counties with a higher percentage of married households and a higher level of disadvantage had lower rates of COVID-19 confirmed cases. In counties with a higher percentage of transportation workers, there was a higher rate of COVID-19 confirmed cases and deaths. Additionally, citizenship was found to be a significant factor in explaining rates of COVID-19 confirmed cases and deaths through the positive relationship between the percentage of citizens and COVID-19 confirmed cases and deaths.

Ultimately, many of these findings are consistent with the literature regarding health disparities indicating that disadvantaged communities are at higher risk of poor health outcomes. In addition, results confirmed both frameworks regarding the importance of social structures factors in explaining health and illness as illustrated by the two theories used in this study. Fundamental Cause Theory emphasized how health is a socioeconomic matter that reproduces itself through mechanisms such as the lack of financial means, knowledge, and resources that are dispersed based on socioeconomic status (Phelan and Link 2013). The findings brought to light the imperative role that social structures play in such outcomes, indicating that social structures should not be taken lightly.

When taking social structures into consideration, the findings shed light on the roles that the state plays in these health outcomes. In short, many of the social structures

that explained COVID-19 confirmed cases and/or deaths in one state may not explain COVID-19 confirmed cases and/or deaths in another state. For example, counties with lower rates of unemployment had lower rates of COVID-19 confirmed cases and deaths, while in New York, counties with higher rates of unemployment had higher rates of COVID-19 confirmed cases yet lower rates of COVID-19 deaths. In addition, the effect unemployment had in explaining COVID-19 outcomes was much more robust in Texas than in New York. These findings raise questions regarding other mechanisms contributing to the current health matter and even health disparities altogether. Such mechanisms could include: geographical location as accounting for high tourism and migration; state political views as influencing the ways through which citizens receive the mandates that could affect COVID-19 health outcomes; and economic standing as impacting resources and resulting in disadvantaged communities. In addition, this study examined the development of the COVID-19 virus over time. Using March 2020 as the month of comparison, the findings indicated differences in outcomes on a month-to-month basis. Compared to March 2020, in California, most months had higher rates of COVID-19 confirmed cases and deaths. In Texas, every month had a higher rate of COVID-19 confirmed cases and deaths than in March 2020. For New York, in the months immediately following March 2020, results indicate fewer confirmed cases than March 2020; however, in the majority of every month after, I found higher rates of COVID-19 confirmed cases and deaths than in March 2020.

In conclusion, as hypothesized, the findings indicated that social structures do explain health outcomes. However, further research is required to better understand this ongoing health matter.

LIMITATIONS

Although there were many significant findings in this study, results must be interpreted with caution. One major limitation in this dissertation was examining a very recent, developing illness that has limited established research to rely on. Limited current research required the examination of past literature regarding other illnesses to understand COVID-19 better. While much of the past literature is relevant to the present health matter, this virus is unique compared to most illnesses in the past. Due to the ongoing current developments surrounding the virus, results could have differed on a month-to-month basis through mechanisms that could not yet be qualified because of how recent it is. These developments include government mandates, including the lifting of mask mandates and vaccinations.

Additionally, since this illness has developed in under two years, its complete understanding and expectations may hinder scholarly research because of limited databases. This study utilized data from five separate databases to compile a dataset with all the variables required. Instead of having access to one database that provided resources for all 3 states, I retrieved data for each state separately. Therefore, it is possible definitions of outcome variables may differ slightly for each state. Lastly, this study only examined three states out of 50. Although I attempted to investigate states from coast to coast, the findings only present explanations for three states in particular.

FUTURE RESEARCH

This research provided significant insight into the current health pandemic and many of the social structures that may influence poor health outcomes. Because this is an ongoing pandemic, there is much room for further research. In January 2021, the U.S. government began administering vaccinations to help with the spread of the COVID-19 virus and prevent COVID-19 deaths. By March 2021, more than 93.6 million vaccine doses had been administered (AJMC Staff 2021). As of August 2021, more than 70 percent of the U.S. population has received at least one vaccination dose (CDC 2021b). According to the CDC (2021d), this free-of-cost vaccine is said to prevent hospitalization, reduce the spread and death rates due to the virus (CDC 2021a). In California, more than 50 percent of its population has received at least one dose of the vaccine (CDC 2021d). For Texas, health experts have estimated that by August 2021, about 44 percent of Texans have been fully vaccinated, not including the 17 percent of children under the age of 12 who are not yet approved for vaccination (AJMC Staff 2021). New York has been recognized as a leading state for vaccinations with more than 63 percent of the total population above the age of 12 being vaccinated by August 2021 (NYC Health 2021). While this study measured the months before this medical development, vaccinations could lead to different findings that must be examined. Furthering the research could determine in what ways, if any, vaccinations affect COVID-19 outcomes while accounting for social structural factors.

Secondly, developments in government mandates and their effects on the current virus must be further examined. In March 2020, the COVID-19 virus was officially

declared a worldwide pandemic. This led to a mandated quarantine and the loss of many jobs due to the closing of public spaces, besides those considered “jobs”. The most common form of transmission of the virus is through physical contact; thus, mandated closures affected the trajectory of COVID-19 because of reduced physical contact. More recently, many states have reduced mandates and even lifted them completely, causing a shift in health outcomes. Texas was recognized as the first state to reopen at 100 percent capacity in March 2021 (TDHSS 2021). While this lifted mandate began in the last month assessed in this study, such developments provide an insight into the political standing of the state that could affect future outcomes of the virus. The essence of time played an integral component in this study considering the virus has developed over two years. Future research could revisit this current study by extending the time frame being examined to evaluate how the mandates change the trajectory of the outcomes in this study. Additionally, considering a more extended period of time for future examination could allow for a better understanding of what could be expected in the long term.

Further, developments in the virus itself require future research. In July 2021, the CDC urged an immediate increase in COVID-19 vaccination coverage and mask-wearing. This came after newly emerging data that indicated a reversal in the downward trajectory of cases (CDC 2021d). According to the WHO (2021a), there has been a mutant to the original COVID-19 virus known as the Delta variant. This variant is reported to be far more infectious than other variants, even among vaccinated individuals, resulting in twice as many infections (WHO 2021a; Worldometer 2020). Much of the time frame assessed in this dissertation took place when the country was in quarantine,

most public places were closed, and many were not encountering any physical contact. While considering that much of the country has resumed normalcy in many aspects, examining the impact of this newest variant could provide different results.

Additionally, I found many differences between states that ultimately affected the COVID-19 health outcomes presented in this study. Studying states that are not recognized as heterogeneous as the states examined in this current study could challenge the findings. Thus, exploring a state that does not fall within the three categories by which I selected these three states could ultimately examine social structural factors from a unique perspective. Lastly, because this study used counties as the unit of analysis among three states, future research could take this study a step further by taking a more exhaustive look into counties within states to examine where the nested health disparities may reside. This can be done by reviewing one state in particular and examining each county's social structures while also analyzing how exactly they affect COVID-19 outcomes.

REFERENCES

Adler, Nancy E., and Katherine Newman. 2002. "Socioeconomic Disparities in Health: Pathways and Policies." *Health Affairs* 21 (2):60–76.

Adler, Nancy E., and Judith Stewart. 2010. "Preface to the Biology of Disadvantage: Socioeconomic Status and Health." *Annals of the New York Academy of Sciences* 1186 (1):1–4. https://doi.org/10.1111/j.1749-6632.2009.05385.x

AJMC Staff. 2021. "A Timeline of COVID-19 Developments in 2020." Accessed December 2020. https://www.ajmc.com/view/a-timeline-of-covid19-developments-in-2020

Alcendor, Donald J. 2020. "Racial Disparities-Associated COVID-19 Mortality Among Minority Populations in the US." *Journal of Clinical Medicine* 9 (8):2442. https://doi.org/10.3390/jcm9082442

Amano, Tatsuya, Isabel Butt, and Kelvin S. Peh. 2018. "The Importance of Green Spaces to Public Health: A Multi‐Continental Analysis." *Ecological Applications* 28 (6):1473–1480. https://doi.org/10.1002/eap.1748

American Immigration Council. 2020. "Immigrants in California." Accessed December 2020. https://www.americanimmigrationcouncil.org/research/immigrants-in-californi a

American Public Health Association. 2001. "Research and Intervention on Racism as a Fundamental Cause of Ethnic Disparities in Health." *American Journal of Public Health* 91 (3):515.

Andrasfay, Theresa, and Noreen Goldman. 2021. "Reductions in 2020 US Life Expectancy Due to COVID-19 and the Disproportionate Impact on the Black and Latino populations." *Proceedings of the National Academy of Sciences* 118 (5). https://doi.org/10.1073/pnas.2014746118

Arnett, M. J., Roland J. Thorpe, D. J. Gaskin, Janice V. Bowie, and Thomas A. LaVeist. 2016. "Race, Medical Mistrust, and Segregation in Primary Care as Usual Source of Care: Findings from the Exploring Health Disparities in Integrated Communities Study." *Journal of Urban Health* 93 (3):456–467. https://doi.org/10.1007/s11524-016-0054-9

Assari, Shervin, and Maryam Moghani Lankarani. 2018. "Workplace Racial Composition Explains High Perceived Discrimination of High Socioeconomic Status African American Men." *Brain Sciences* 8 (8):139. https://doi.org/10.3390/brainsci8080139

Assari, Shervin, Mehdi Farokhnia and Ritesh Mistry. 2019. "Education Attainment and Alcohol Binge Drinking: Diminished Returns of Hispanics in Los Angeles." *Behavioral Sciences* 9 (1):9. https://doi.org/10.3390/bs9010009

Assari, Shervin, and Ritesh Mistry. 2018. “Educational Attainment and Smoking Status in a National Sample of American Adults; Evidence for the Blacks’ Diminished

Return." *International Journal of Environmental Research and Public Health* 15 (4):763. http://dx.doi.org/10.3390/ijerph15040763

Azar, Kristen M., Zijun Shen, Robert J. Romanelli, Stephen H. Lockhart, Kelly Smits, Sarah Robinson, Stephanie Brown, and Alice R. Pressman. 2020. "Disparities In Outcomes Among COVID-19 Patients In A Large Health Care System In California: Study Estimates the COVID-19 Infection Fatality Rate at the US County Level." *Health Affairs.* 39 (7):1253–1262. https://doi.org/10.1377/hlthaff.2020.00598

Bäcker, Alex. 2020a. "Non-black Hispanic/Latinos Spend More Time Outdoors and Have Lower COVID-19 Morbidity Than Non-Hispanic/Latinos." *Latinos (April 13, 2020)*.

Bäcker, Alex. 2020b. "Why COVID-19 May be Disproportionately Killing frican Americans: Black Overrepresentation Among COVID-19 Mortality Increases with Lower Irradiance, Where Ethnicity is More Predictive of COVID-19 Infection and Mortality than Median Income." *Where Ethnicity is More Predictive of COVID-19 Infection and Mortality than Median Income (April 8, 2020)*. http://dx.doi.org/10.2139/ssrn.3571699

Bailey, Zinzi D., Nancy Krieger, Madina Agénor, Jasmine Graves, Natalia Linos, and Mary T. Bassett. 2017. "Structural Racism and Health Inequities in the USA: Evidence and Interventions." *The Lancet* 389 (10077):1453–1463. https://doi.org/10.1016/S0140-6736(17)30569-X

Bell, Caryn N., Roland J. Thorpe Jr, Janice V. Bowie, and Thomas A. LaVeist. 2018. "Race Disparities in Cardiovascular Disease Risk Factors Within Socioeconomic Status Strata." *Annals of Epidemiology* 28 (3):147–152. https://doi.org/10.1016/j.annepidem.2017.12.007

Benfer, Emily A., Seema Mohapatra, Lindsay F. Wiley, and Ruqaiijah Yearby. 2020. "Health Justice Strategies to Combat the Pandemic: Eliminating Discrimination, Poverty, and Health Disparities During and After COVID-19." *Yale Journal of Health Policy, Law, and Ethics* 19 (3):3. https://digitalcommons.law.yale.edu/yjhple/vol19/iss3/3

Bentley, Gillian R. 2020. "Don't Blame the BAME: Ethnic and Structural Inequalities in Susceptibilities to COVID‐19." *American Journal of Human Biology* 32 (5):e23478. https://doi.org/10.1002/ajhb.23478

Bertocchi, Graziella, and Arcangelo Dimico. 2020. "COVID-19, Race, and Redlining." CEPR Discussion Paper No. DP15013, https://ssrn.com/abstract=3650128

Berkman, Lisa F., and S. L. Syme. 1979. "Social Networks, Host Resistance, and Mortality: A Nine-Year Follow-Up Study of Alameda County Residents." *American Journal of Epidemiology* 109 (2):186–204. https://doi.org/10.1093/oxfordjournals.aje.a112674

Bhala, Neeraj, Gwenetta Curry, Adrian R. Martineau, Charles Agyemang, and Raj Bhopal. 2020. "Sharpening the Global Focus on Ethnicity and Race in the Time

of COVID-19." *The Lancet* 395 (10238):1673–1676. https://doi.org/10.1016/S0140-6736(20)31102-8

Bhowmik, Tanmoy, Sudipta D. Tirtha, Naveen C. Iraganaboina, and Naveen Eluru. 2021. "A Comprehensive Analysis of COVID-19 Transmission and Mortality Rates at the County Level in the United States Considering Socio-Demographics, Health Indicators, Mobility Trends and Health Care Infrastructure Attributes." *Plos One* 16 (4):e0249133. https://doi.org/10.1371/journal.pone.0249133

Binswanger, Ingrid A., Nicole Redmond, John F. Steiner, and LeRoi S. Hicks. 2012. "Health Disparities and the Criminal Justice System: An Agenda for Further Research and Action." *Journal of Urban Health* 89 (1):98–107. https://doi.org/10.1007/s11524-011-9614-1

Bourdieu, Pierre. 1987. *Distinction: A Social Critique of the Judgement of Taste.* Cambridge, MA: Harvard University Press.

Brachman, Philip S. 2003. "Infectious Diseases—Past, Present, and Future." *International Journal of Epidemiology.* 32 (5):684–686 https://doi.org/10.1093/ije/dyg282

Braveman, Paula A., Shiriki Kumanyika, Jonathan Fielding, Thomas LaVeist, Luisa N. Borrell, Ron Manderscheid, and Adewale Troutman. 2011. "Health Disparities and Health Equity: The Issue is Justice." *American Journal of Public Health* 101 (S1):S149–S155. https://doi.org/10.2105/AJPH.2010.300062

Brown, Tyson H., Angela M. O'Rand, and Daniel E. Adkins. 2012. "Race-Ethnicity and Health Trajectories: Tests of Three Hypotheses Across Multiple Groups and Health Outcomes." *Journal of Health and Social Behavior* 53 (3):359–377. https://doi.org/10.1177/0022146512455333

Browning, Christopher R. 2002. "The Span of Collective Efficacy: Extending Social Disorganization Theory to Partner Violence." *Journal of Marriage and Family* 64 (4):833–850. https://doi.org/10.1111/j.1741-3737.2002.00833.x

Browning, Christopher R., Kathleen A. Cagney, and Ming Wen. 2003. "Explaining Variation in Health Status Across Space and Time: Implications for Racial and Ethnic Disparities in Self-Rated Health." *Social Science and Medicine* 57 (7):1221–1235. https://doi.org/10.1016/s0277-9536(02)00502-6

Browning, Christopher R., Kathleen A. Cagney, and James Iveniuk. 2012. "Neighborhood Stressors and Cardiovascular Health: Crime and C-reactive Protein in Dallas, USA." *Social Science and Medicine* 75 (7):1271–1279. https://doi.org/10.1016/j.socscimed.2012.03.027

Bursik Jr, Robert J., and Harold G. Grasmick. 1993. "Economic Deprivation and Neighborhood Crime Rates, 1960-1980." *Law and Soc'Y Rev.* 27:263.

Butler, Ashley M. 2017. "Social Determinants of Health and Racial/Ethnic Disparities in Type 2 Diabetes in Youth." *Current Diabetes Reports* 17 (8):1–4. https://doi.org/10.1007/s11892-017-0885-0

California Department of Public Health. 2021. “Health Care Worker Vaccine Requirement.” Accessed September 2021. https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/COVID-19/Order-of-the-State-Public-Health-Officer-Health-Care-Worker-Vaccine-Requirement.aspx

California Open Data Portal. 2020. Accessed March 2020. https://data.ca.gov/dataset/covid-19-cases/resource/926fd08f-cc91-4828-af38-bd45de97f8c3/

California State Portal. 2020. Accessed September 2021. https://www.ca.gov/

Cantillon, Dan, William S. Davidson II, and John H. Schweitzer. 2003. "Measuring Community Social Organization: Sense of Community as a Mediator in Social Disorganization Theory." *Journal of Criminal Justice* 31 (4):321–339. https://doi.org/10.1016/S0047-2352(03)00026-6

Cao, Wenjun, Ziwei Fang, Guoqiang Hou, Mei Han, Xinrong Xu, Jiaxin Dong, and Jianzhong Zheng. 2020. "The Psychological Impact of the COVID-19 Epidemic on College Students in China." *Psychiatry Research* 287:112934. https://doi.org/10.1016/j.psychres.2020.112934

Carr, Deborah, and Kristen W. Springer. 2010. "Advances in Families and Health Research in the 21st Century." *Journal of Marriage and Family* 72 (3):743–761. https://doi.org/10.1111/j.1741-3737.2010.00728.x

Carnethon, Mercedes R., Jia Pu, George Howard, Michelle A. Albert, Cheryl A. Anderson, Alain G. Bertoni, et al. 2017. "Cardiovascular Health in African

Americans: A Scientific Statement From the American Heart Association." *Circulation* 136 (21):e393–e423. https://doi.org/10.1161/CIR.0000000000000534

CDC. (Centers for Disease Control and Prevention) 2019. “Health, United States Spotlight: Racial and Ethnic Disparities in Heart Disease.” Accessed June 2021. https://www.cdc.gov/nchs/hus/spotlight/HeartDiseaseSpotlight_2019_0404.pdf

CDC. (Centers for Disease Control and Prevention) 2020a. “COVID-19.” Accessed January 2021. https://www.cdc.gov/coronavirus/2019-ncov/index.html

CDC. (Centers for Disease Control and Prevention) 2020b. “COVID Data Tracker.” Accessed April 2020. https://covid.cdc.gov/covid-data-tracker/index.html#datatracker-home

CDC. (Centers for Disease Control and Prevention). 2021. “Key Things to Know.” Accessed April 2020. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/keythingstoknow.html?s_cid=10493:covid%2019%20vaccines:sem.ga:p:RG:GM:gen:PTN:FY21

Chen, Edith, Andrew D. Martin, and Karen A. Matthews. 2006. "Understanding Health Disparities: The Role of Race and Socioeconomic Status in Children’s Health." *American Journal of Public Health* 96 (4):702–708. https://doi.org/10.2105/AJPH.2004.048124

Chen, Jarvis T. and Nancy Krieger. 2020. "Revealing the Unequal Burden of COVID-19 by Income, Race/Ethnicity, and Household Crowding: US County Versus Zip

Code Analysis." *Journal of Public Health Management and Practice: JPHMP*. 27 (1):S43–S56. https://doi.org/10.1097/PHH.0000000000001263

Chen, Jie, Arturo Vargas-Bustamante, Karoline Mortensen, and Alexander N. Ortega. 2016. "Racial and Ethnic Disparities in Health Care Access and Utilization Under the Affordable Care Act." *Medical Care* 54 (2):140. https://doi.org/10.1097/MLR.0000000000000467

Chen, Yu‐Chi, Li‐Chun Chang, Chieh‐Yu Liu, Ya‐Fang Ho, Shuo‐Chun Weng, and Tzu‐I Tsai. 2018. "The Roles of Social Support and Health Literacy in Self‐Management Among Patients with Chronic Kidney Disease." *Journal of Nursing Scholarship* 50 (3):265–275. https://doi.org/10.1111/jnu.12377

Cheng, Shi-Hua, Jie-Yun Zhuang, Ye-Yang Fan, Jing-Hong Du and Li-Yong Cao. 2007. "Progress in Research and Development on Hybrid Rice: A Super-Domesticate in China." *Annals of Botany* 100 (5):959–966. https://doi.org/10.1093/aob/mcm121

Chowkwanyun, Merlin, and Adolph L. Reed Jr. 2020. "Racial Health Disparities and COVID-19—Caution and Context." *New England Journal of Medicine* 383 (3):201–203. https://doi.org/10.1056/NEJMp2012910

Chu, Daniel K., Yang Pan, Samuel M. Cheng, Kenrie P. Hui, Pavithra Krishnan, Yingzhi Liu, Daisy Y. Ng, Carrie K. Wan, Peng Yang, and Quanyi Wang. 2020. "Molecular Diagnosis of a Novel Coronavirus (2019-nCoV) Causing An

Outbreak of Pneumonia." *Clinical Chemistry* 66 (4):549–555. https://doi.org/10.1093/clinchem/hvaa029

Cockerham, William C. 2013. "Sociological Theory in Medical Sociology in the Early Twenty-First Century." *Social Theory and Health* 11 (3):241–255.

Cockerham, William C. 2017. *Medical sociology.* New York: Routledge.

Cohen, Amy N., Constance Hammen, Risha M. Henry, and Shannon E. Daley. 2004. "Effects of Stress and Social Support on Recurrence in Bipolar Disorder." *Journal of Affective Disorders* 82 (1):143–147. https://doi.org/10.1016/j.jad.2003.10.008

Copeland, Jennifer L., Maureen C. Ashe, Stuart J. Biddle, Wendy J. Brown, Matthew P. Buman, Sebastien Chastin, Paul A. Gardiner, Shigeru Inoue, Barbara J. Jefferis, and Koichiro Oka. 2017. "Sedentary Time in Older Adults: A Critical Review of Measurement, Associations with Health, and Interventions." *British Journal of Sports Medicine* 51 (21):1539. https://doi.org/10.1136/bjsports-2016-097210

Curley, Andrew. 2021. "Unsettling Indian Waterr Settlements: The Little Colorado River, The San Juan River, and Colonial Enclosures." *Antipode* 53 (3):705–723. https://doi.org/10.1111/anti.12535

de Brito, Tábatta Renata Pereira, Daniella P. Nunes, Ligiana P. Corona, Tiago da Silva Alexandre, and de Oliveira Duarte, Yeda Aparecida. 2017. "Low Supply of Social Support As a Risk Factor for Mortality in the Older Adults." *Archives of*

Gerontology and Geriatrics 73:77–81. https://doi.org/10.1016/j.archger.2017.07.016

Denney, Justin T., Jarron M. Saint Onge, and Jeff A. Dennis. 2018. "Neighborhood Concentrated Disadvantage and Adult Mortality: Insights for Racial and Ethnic Differences." *Population Research and Policy Review* 37 (2):301–321. https://doi.org/10.1007/s11113-018-9461-9

Department of Labor. 2021. “Helping New York Get Back to Work.” Accessed March 2020. https://dol.ny.gov/

Derlet, Robert W., John R. Richards, and Richard L. Kravitz. 2001. "Frequent Overcrowding in U.S. Emergency Departments." *Academic Emergency Medicine* 8 (2):151–155. https://doi.org/10.1111/j.1553-2712.2001.tb01280.x

Diez Roux, Ana V. 2001. "Investigating Neighborhood and Area Effects on Health." *American Journal of Public Health* 91 (11):1783–1789. https://doi.org/10.2105/ajph.91.11.1783

Diez Roux, Ana V., and Christina Mair. 2010. "Neighborhoods and Health." https://doi.org/10.1111/j.1749-6632.2009.05333.x

Donkin, Angela J. 2014. "Social Gradient." *The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society* 2172–2178. https://doi.org/10.1002/9781118410868.wbehibs530

Drefahl, Sven, Matthew Wallace, Eleonora Mussino, Siddartha Aradhya, Martin Kolk, Maria Brandén, Bo Malmberg, and Gunnar Andersson. 2020. "A Population-Based Cohort Study of Socio-Demographic Risk Factors For COVID-19 Deaths in Sweden." *Nature Communications* 11 (1):1–7. https://doi.org/10.1038/s41467-020-18926-3

Dubowitz, Tamara, Collette Ncube, Kristin Leuschner, and Shannah Tharp-Gilliam. 2015. "A Natural Experiment Opportunity in Two Low-Income Urban Food Desert Communities: Research Design, Community Engagement Methods, and Baseline Results." *Health Education and Behavior* 42 (1_suppl):87S–96S. https://doi.org/10.1177/1090198115570048

Dunlap, Alexander. 2018. "The 'Solution'is Now the 'Problem:'Wind Energy, Colonisation and the 'Genocide-Ecocide Nexus' in The Isthmus of Tehuantepec, Oaxaca." *The International Journal of Human Rights* 22 (4):550-573. https://doi.org/10.1080/13642987.2017.1397633

Dunlap, Eloise, Bruce D. Johnson, Joseph A. Kotarba, and Jennifer L. Fackler. 2010. "Macro-Level Social Forces and Micro-Level Consequences: Poverty, Alternate Occupations, and Drug Dealing." *Journal of Ethnicity in Substance Abuse* 9 (2):115–127. https://doi.org/10.1080/15332641003772611

Dunlap, Glen, Phillip Strain, Janice K. Lee, Jaclyn Joseph, and Nancy Leech. 2018. "A Randomized Controlled Evaluation of Prevent-Teach-Reinforce for Young

Children." *Topics in Early Childhood Special Education* 37 (4):195–205. https://doi.org/10.1177/0271121417724874

Dyal, Jonathan W., Michael P. Grant, Kenda Broadwater, Adam Bjork, Michelle A. Waltenburg, John D. Gibbins, Christa Hale, et al. 2020. "COVID-19 Among Workers in Meat and Poultry Processing Facilities—19 states, April 2020." *MMWR.Morbidity and Mortality Weekly Report* 69 https://doi.org/(18):557.10.15585/mmwr.mm6918e3

Egede, Leonard E. 2006. "Race, Ethnicity, Culture, and Disparities in Health Care." *Journal of General Internal Medicine* 21 (6):667. https://doi.org/10.1111/j.1525-1497.2006.0512.x

El-Zoghby, Safaa M., Enayat M. Soltan, and Hend M. Salama. 2020. "Impact of the COVID-19 Pandemic on Mental Health and Social Support among Adult Egyptians." *Journal of Community Health* 45 :689–695. https://doi.org/10.1007/s10900-020-00853-5

Employment Development Department. 2021. "Unemployment and COVID-19." Accessed July 2021. https://edd.ca.gov/

Evans, Shani. 2020. "When Schools Choose: Evaluation and Educational Inequality." *The Sociological Quarterly* 61 (4):727–747. https://doi.org/10.1080/00380253.2019.1711248

Fan, Jingchun, Xiaodong Liu, Guojun Shao, Junpin Qi, Yi Li, Weimin Pan, Brett D. Hambly, and Shisan Bao. 2020. "The Epidemiology of Reverse Transmission of

COVID-19 in Gansu Province, China." *Travel Medicine and Infectious Disease* 37:101741. https://doi.org/10.1016/j.tmaid.2020.101741

Firebaugh, Glenn, and Francesco Acciai. 2016. "For Blacks in America, the Gap in Neighborhood Poverty has Declined Faster Than Segregation." *Proceedings of the National Academy of Sciences* 113 (47):13372–13377. https://doi.org/10.1073/pnas.1607220113

Freedman, David, and George W. Woods. 2013. "Neighborhood Effects, Mental Illness and Criminal Behavior: A review." *Journal of Politics and Law* 6 (3):1. https://doi.org/10.5539/jpl.v6n3p1

Freese Jeremy., and Lutfey Karen. 2011. "Fundamental Causality: Challenges of an Animating Concept for Medical Sociology." In: Pescosolido B., Martin J., McLeod J., Rogers A. (eds) Handbook of the Sociology of Health, Illness, and Healing. Handbook of Sociology and Social Research. Springer, New York, NY. https://doi.org/10.1007/978-1-4419-7261-3_4

Gangopadhyaya, Anuj, and A. B. Garrett. 2020. "Unemployment, Health Insurance, and the COVID-19 Recession." *Health Insurance, and the COVID-19 Recession (April 1, 2020)*. http://dx.doi.org/10.2139/ssrn.3568489

Gao, Li, Audrey V. Grant, Nicholas Rafaels, Maria Stockton-Porter, Tonya Watkins, Peisong Gao, Peter Chi, Melba Muñoz, Harold Watson, and Georgia Dunston. 2007. "Polymorphisms in the Myosin Light Chain Kinase Gene that Confer Risk of Severe Sepsis are Associated with a Lower Risk of Asthma." *Journal of*

Allergy and Clinical Immunology 119 (5):1111–1118. https://doi.org/10.1016/j.jaci.2007.03.019

Gee, Gilbert C., and Payne-Sturges, Devon. C. 2004. “Environmental health disparities: a framework integrating psychosocial and environmental concepts.” *Environmental health perspectives*, 112 (17), 1645–1653. https://doi.org/10.1289/ehp.7074

Gee, Gilbert C., and Margaret T. Hicken. 2021. "Structural Racism: The Rules and Relations of Inequity." *Ethnicity and Disease* 31 (Suppl):293–300. https://doi.org/10.18865/ed.31.S1.293

Gibson, Diane M., and Jessica Greene. 2020. "Risk for Severe COVID-19 Illness Among Health Care Workers Who Work Directly with Patients." *Journal of General Internal Medicine* 35 (9):2804–2806. https://doi.org/10.1007/s11606-020-05992-y

Goggin, Gerard, and Katie Ellis. 2020. "Disability, Communication, and Life Itself in the COVID-19 Pandemic." *Health Sociology Review* 29 (2):168–176. https://doi.org/10.1080/14461242.2020.1784020

Gold, Jeremy A., Lauren M. Rossen, Farida B. Ahmad, Paul Sutton, Zeyu Li, Phillip P. Salvatore, Jayme P. Coyle, et al. 2020. "Race, Ethnicity, and Age Trends in Persons Who Died From COVID-19—United States, May–August 2020." *Morbidity and Mortality Weekly Report* 69 (42):1517. https://doi.org/10.15585/mmwr.mm6942e1

Golden, Sherita H., Joshua J. Joseph, and Felicia Hill-Briggs. 2021. "Casting a Health Equity Lens on Endocrinology and Diabetes." *The Journal of Clinical Endocrinology and Metabolism* 106 (4):e1909-e1916. https://doi.org/10.1210/clinem/dgaa938

Gracey, Michael, and Malcolm King. 2009. "Indigenous Health Part 1: Determinants and Disease Patterns." *The Lancet* 374 (9683):65–75. https://doi.org/10.1016/S0140-6736(09)60914-4

Gross, Andrea M., Pamela L. Wolters, Eva Dombi, Andrea Baldwin, Patricia Whitcomb, Michael J. Fisher, Brian Weiss, et al. 2020. "Selumetinib in Children with Inoperable Plexiform Neurofibromas." *New England Journal of Medicine* 382 (15):1430–1442. https://doi.org/10.1056/NEJMoa1912735

Günther, Anke, Alexandra Barthelmes, Vytas Huth, Hans Joosten, Gerald Jurasinski, Franziska Koebsch, and John Couwenberg. 2020. "Prompt Rewetting of Drained Peatlands Reduces Climate Warming Despite Methane Emissions." *Nature Communications* 11 (1):1–5. https://doi.org/10.1038/s41467-020-15499-z

Gupta, Rajeev. 2006. "Smoking, Educational Status and Health Inequity in India." *Indian Journal of Medical Research* 124 (1):15.

Hadley, Jack. 2003. "Sicker and Poorer—The Consequences of being Uninsured: A Review of the Research on the Relationship between Health Insurance, Medical

Care use, Health, Work, and Income." *Medical Care Research and Review* 60 (2_suppl):3S–75S. https://doi.org/10.1177/1077558703254101

Hahm, Hyeouk C., Al Ozonoff, Jillian Gaumond, and Stanley Sue. 2010. "Perceived Discrimination and Health Outcomes: A Gender Comparison Among Asian-Americans Nationwide." *Women's Health Issues* 20 (5):350–358. https://doi.org/10.1016/j.whi.2010.05.002

Hanson, Kimberly E., Angela M. Caliendo, Cesar A. Arias, Janet A. Englund, Mark J. Lee, Mark Loeb, Robin Patel, Abdallah El Alayli, Mohamad A. Kalot, and Yngve Falck-Ytter. 2020. "Infectious Diseases Society of America Guidelines on the Diagnosis of COVID-19." *Clinical Infectious Diseases*. https://doi.org/10.1093/cid/ciaa760

Hartley, David. 2004. "Rural Health Disparities, Population Health, and Rural Culture." *American Journal of Public Health* 94 (10):1675–1678. https://doi.org/10.2105/ajph.94.10.1675

Hastings, Katherine G., Powell O. Jose, Kristopher I. Kapphahn, Ariel T. Frank, Benjamin A. Goldstein, Caroline A. Thompson, Karen Eggleston, Mark R. Cullen, and Latha P. Palaniappan. 2015. "Leading Causes of Death among Asian American Subgroups (2003–2011)." *PLoS One* 10 (4):e0124341. https://doi.org/10.1371/journal.pone.0124341

Hatzenbuehler, Mark L., Jo C. Phelan, and Bruce G. Link. 2013. "Stigma as a Fundamental Cause of Population Health Inequalities." *American Journal of Public Health* 103 (5):813–821. https://doi.org/10.2105/AJPH.2012.301069

Health Affairs. 2021. “COVID-19 Resource Center.” Accessed August 2021. https://www.healthaffairs.org/covid-19-coronavirus-disease

Himmelstein, David U., Elizabeth Warren, Deborah Thorne, and Steffie Woolhandler. 2005. “Illness And Injury As Contributors To Bankruptcy: Even Universal Coverage Could Leave Many Americans Vulnerable to Bankruptcy Unless Such Coverage Was More Comprehensive Than Many Current Policies.” *Health Affairs* 24 (Suppl1):W5–73. https://doi.org/10.1377/hlthaff.w5.63

Holt-Lunstad, Julianne, Timothy B. Smith, Mark Baker, Tyler Harris, and David Stephenson. 2015. "Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review." *Perspectives on Psychological Science* 10 (2):227–237. https://doi.org/10.1177/1745691614568352

Hooper, Monica W., Anna M. Nápoles, and Eliseo J. Pérez-Stable. 2020. "COVID-19 and Racial/Ethnic Disparities." *Jama* 323 (24):2466–2467. https://doi.org/10.1001/jama.2020.8598

House, James S., Ronald C. Kessler, and A. R. Herzog. 1990. "Age, Socioeconomic Status, and Health." *The Milbank Quarterly* 383–411.

Howard, Jeremy, Austin Huang, Zhiyuan Li, Zeynep Tufekci, Vladimir Zdimal, Helene-Mari van der Westhuizen, Arne von Delft, et al. 2021. "An Evidence Review of Face Masks Against COVID-19." *Proceedings of the National Academy of Sciences* 118 (4). https://doi.org/10.1073/pnas.2014564118

Hudson, Darrell L., Kai M. Bullard, Harold W. Neighbors, Arline T. Geronimus, Juan Yang, and James S. Jackson. 2012. "Are Benefits Conferred with Greater Socioeconomic Position Undermined by Racial Discrimination Among African American Men?" *Journal of Men's Health* 9 (2):127–136. https://doi.org/10.1016/j.jomh.2012.03.006

Hui, David, Yu J. Kim, Ji C. Park, Yi Zhang, Florian Strasser, Nathan Cherny, Stein Kaasa, Mellar P. Davis, and Eduardo Bruera. 2015. "Integration of Oncology and Palliative Care: A Systematic Review." *The Oncologist* 20 (1):77. https://doi.org/10.1634/theoncologist.2014-0312

Iceland, John, and Erik Hernandez. 2017. "Understanding Trends in Concentrated Poverty: 1980–2014." *Social Science Research* 62:75–95. https://doi.org/10.1016/j.ssresearch.2016.09.001

Jacklin, Kristen M., Rita I. Henderson, Michael E. Green, Leah M. Walker, Betty Calam, and Lynden J. Crowshoe. 2017. "Health Care Experiences of Indigenous People Living with Type 2 Diabetes in Canada." *Cmaj* 189 (3):E106–E112. https://doi.org/10.1503/cmaj.161098

Jones, Jennifer R., Sue Berney, Bronwen Connolly, Jamie L. Waterland, Linda Denehy, David M. Griffith, and Zudin A. Puthucheary. 2019. "Socioeconomic Position and Health Outcomes Following Critical Illness: A Systematic Review." *Critical Care Medicine* 47 (6):e512–e521. https://doi.org/10.1097/CCM.0000000000003727

Karaca-Mandic, Pinar, Archelle Georgiou, and Soumya Sen. 2021. "Assessment of COVID-19 Hospitalizations by Race/Ethnicity in 12 states." *JAMA Internal Medicine* 181 (1):131–134. https://doi.org/10.1001/jamainternmed.2020.3857

Kawachi, Ichiro, and Lisa F. Berkman. 2014. "Social Capital, Social Cohesion, and Health." *Social Epidemiology* 2:290–319. https://doi.org/10.1093/med/9780195377903.003.0008

Kendi, Ibram X. 2020. "Stop Blaming Black People for Dying of the Coronavirus." *The Atlantic* 14. Accessed March 2020. https://www.theatlantic.com/ideas/archive/2020/04/race-and-blame/609946/

Kerns, Sarah L., Chunkit Fung, Sophie D. Fossa, Paul C. Dinh Jr, Patrick Monahan, Howard D. Sesso, Robert D. Frisina, et al. 2020. "Relationship of Cisplatin-Related Adverse Health Outcomes with Disability and Unemployment Among Testicular Cancer Survivors." *JNCI Cancer Spectrum* 4 (4):pkaa022. https://doi.org/10.1093/jncics/pkaa022

Khullar, Dhruv, and Dave A. Chokshi. 2018. "Health, Income, and Poverty: Where We Are and What Could Help." *Health Affairs* 10.

Killerby, Marie E., Ruth Link-Gelles, Sarah C. Haight, Caroline A. Schrodt, Lucinda England, Danica J. Gomes, Mays Shamout, Kristen Pettrone, Kevin O'Laughlin, and Anne Kimball. 2020. "Characteristics associated with Hospitalization Among Patients with COVID-19—Metropolitan Atlanta, Georgia, March–April 2020." *Morbidity and Mortality Weekly Report* 69 (25):790. http://dx.doi.org/10.15585/mmwr.mm6925e1

Kingston, Beverly, David Huizinga, and Delbert S. Elliott. 2009. "A Test of Social Disorganization Theory in High-Risk Urban Neighborhoods." *Youth and Society* 41 (1):53–79. https://doi.org/10.1177/0044118X09338343

Kirby, James B., and Toshiko Kaneda. 2010. "Unhealthy and Uninsured: Exploring Racial Differences in Health and Health Insurance Coverage Using a Life Table Approach." *Demography* 47 (4):1035-1051. https://doi.org/10.1007/BF03213738

Kotlaja, Marijana M. 2020. "Cultural Contexts of Individualism vs. Collectivism: Exploring the Relationships Between Family Bonding, Supervision and Deviance." *European Journal of Criminology* 17 (3):288–305. https://doi.org/10.1177/1477370818792482

Kowitt, Sarah D., Katrina E. Donahue, Edwin B. Fisher, Madeline Mitchell, and Laura A. Young. 2018. "How is Neighborhood Social Disorganization Associated with Diabetes Outcomes? A Multilevel Investigation of Glycemic Control and Self-Reported use of Acute or Emergency Health Care Services." *Clinical*

Diabetes and Endocrinology 4 (1):1–12. https://doi.org/10.1186/s40842-018-0069-0

Krivo, Lauren J., Heather M. Washington, Ruth D. Peterson, Christopher R. Browning, Catherine A. Calder, and Mei-Po Kwan. 2013. "Social Isolation of Disadvantage and Advantage: The Reproduction of Inequality in Urban Space." *Social Forces* 92 (1):141–164. https://www.jstor.org/stable/43287520

Kubrin, Charis E. 2008. "Making Order of Disorder: A Call for Conceptual Clarity." *Criminology & Pub.Pol'Y* 7:203. https://doi.org/10.1037/xge0000240

Kubrin, Charis E., and Ronald Weitzer. 2003. "New Directions in Social Disorganization Theory." *Journal of Research in Crime and Delinquency* 40 (4):374–402. https://doi.org/10.1177/0022427803256238

Kubrin, R., and W. Bauhofer. 2009. "Influence of Polymeric Additives on Morphology and Performance of Y2O3: Eu Phosphor Synthesized by Flame-Assisted Spray Pyrolysis." *Journal of Luminescence* 129 (9):1060–1066. https://doi.org/10.1016/j.jlumin.2009.04.038

Kurian, Allison W., Rebecca N. Thompson, Allison F. Gaw, Sally Arai, Rafael Ortiz, and Alan M. Garber. 2007. "A Cost-Effectiveness Analysis of Adjuvant Trastuzumab Regimens in Early HER2/Neu–Positive Breast Cancer." *Journal of Clinical Oncology* 25 (6):634–641.http://nrs.harvard.edu/urn-3:HUL.InstRepos:11563364

Kuzawa, Christopher W. and Elizabeth Sweet. 2009. "Epigenetics and the Embodiment of Race: Developmental Origins of US Racial Disparities in Cardiovascular Health." *American Journal of Human Biology: The Official Journal of the Human Biology Association* 21 (1):2–15. https://doi.org/10.1002/ajhb.20822

Lau, Hien, Veria Khosrawipour, Piotr Kocbach, Agata Mikolajczyk, Justyna Schubert, Jacek Bania, and Tanja Khosrawipour. 2020. "The Positive Impact of Lockdown in Wuhan on Containing the COVID-19 Outbreak in China." *Journal of Travel Medicine* 27 (3):taaa037. https://doi.org/10.1093/jtm/taaa037

Laurencin, Cato T., and Aneesah McClinton. 2020. "The COVID-19 Pandemic: A Call to Action to Identify and Address Racial and Ethnic Disparities." *Journal of Racial and Ethnic Health Disparities* 7 (3):398–402. https://doi.org/10.1007/s40615-020-00756-0

Lavallee, Lynn F., and Jennifer M. Poole. 2010. "Beyond Recovery: Colonization, Health and Healing for Indigenous People in Canada." *International Journal of Mental Health and Addiction* 8 (2):271-281. https://doi.org/10.1007/s11469-009-9239-8

Lawrence, Elizabeth M., Richard G. Rogers, Anna Zajacova, and Tim Wadsworth. 2019. "Marital Happiness, Marital Status, Health, and Longevity." *Journal of Happiness Studies* 20 (5):1539–1561. https://doi.org/10.1007/s10902-018-0009-9

Leon, David A., and Gillian Walt. 2001. *Poverty, Inequality, and Health: An International Perspective.* Oxford University Press. https://doi.org/10.1093/acprof:oso/9780192631961.001.0001

Levine, Morgan E., and Eilleen M. Crimmins. 2014. "Evidence of Accelerated Aging Among African Americans and its Implications for Mortality." *Social Science and Medicine.* https://doi.org/118:27–32. 10.1016/j.socscimed.2014.07.022

Lewis, Megan A., and Karen S. Rook. 1999. "Social Control in Personal Relationships: Impact on Health Behaviors and Psychological Distress." *Health Psychology* 18 (1):63. https://doi.org/10.1037/0278-6133.18.1.63

Lieberson, Stanley. 1985. “Making it Count: The Improvement of Social Research and Theory”. Berkeley: University of California Press.

Lindström, Martin. 2009. "Marital Status, Social Capital, Material Conditions and Self-Rated Health: A Population-Based Study." *Health Policy* 93 (2-3):172–179. https://doi.org/10.1016/j.healthpol.2009.05.010

Link, Bruce. G., and Phelan, Jo. C. 1995. “Social Conditions as Fundamental Causes of Disease.” *Journal of Health and Social Behavior (extra issue),* 80–94. https://doi.org/10.2307/2626958

Link, Bruce. G., and Phelan, Jo. C. 2010. “Social Conditions as Fundamental Causes of Health Inequalities”. In C. Bird, P. Conrad, A. Fremont, and S. Timmermans (Eds.), Handbook of medical sociology (6th ed., pp. 3–17). Nashville: Vanderbilt University Press.

Liu, Hui and Debra J. Umberson. 2008. "The Times They are a Changin': Marital Status and Health Differentials from 1972 to 2003." *Journal of Health and Social Behavior* 49 (3):239–253. https://doi.org/10.1177/002214650804900301

Louis-Jean, James, Kenney Cenat, Chidinma V. Njoku, James Angelo, and Debbie Sanon. 2020. "Coronavirus (COVID-19) and Racial Disparities: A Perspective Analysis." *Journal of Racial and Ethnic Health Disparities* 7 (6):1039–1045. https://doi.org/10.1007/s40615-020-00879-4

Ludwig, Jens, Lisa Sanbonmatsu, Lisa Gennetian, Emma Adam, Greg J. Duncan, Lawrence F. Katz, Ronald C. Kessler, Jeffrey R. Kling, Stacy T. Lindau, and Robert C. Whitaker. 2011. "Neighborhoods, Obesity, and Diabetes—a Randomized Social Experiment." *New England Journal of Medicine* 365 (16):1509–1519. https://doi.org/10.1056/NEJMsa1103216

Mackenbach, Johan P., Ivana Kulhánová, Matthias Bopp, Patrick Deboosere, Terje A. Eikemo, Rasmus Hoffmann, Margarete C. Kulik, et al. 2015. "Variations in the Relation Between Education and Cause-Specific Mortality in 19 European Populations: A Test of the "Fundamental Causes' Theory of Social Inequalities in Health." *Social Science and Medicine* 127:51–62. https://doi.org/10.1016/j.socscimed.2014.05.021

Madyun, Na'im H. 2011. "Connecting Social Disorganization Theory to African-American Outcomes to Explain the Achievement Gap." *Educational Foundations* 25:21–35.

Magnusson, Karin, Jon Helgeland, Mari Grøsland, and Kjetil Telle. 2021. "Impact of the COVID-19 Pandemic on Emergency and Elective Hip Surgeries in Norway." *Acta Orthopaedica*:1–5. https://doi.org/10.1080/17453674.2021.1898782

Magnusson, Karin, Karin M. Nygard, Fredrik Methi, Line Vold, and Kjetil E. Telle. 2021. "Occupational Risk of COVID-19 in the 1st vs 2nd Wave of Infection." *medRxiv*:2020.10. 29.20220426.

Malik, Amyn A., SarahAnn M. McFadden, Jad Elharake, and Saad B. Omer. 2020. "Determinants of COVID-19 Vaccine Acceptance in the US." *EClinicalMedicine* 26:100495. https://doi.org/10.1016/j.eclinm.2020.100495

Markides, Kyriakos S., and Karl Eschbach. 2005. "Aging, Migration, and Mortality: Current Status of Research on the Hispanic Paradox." *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 60 (Special_Issue_2):S68–S75. https://doi.org/10.1093/geronb/60.Special_Issue_2.S68

Markowitz, Andy. 2021. "State-by-State Guide to Face Mask Requirements." Accessed September 2021. https://www.aarp.org/health/healthy-living/info-2020/states-mask-mandates-coronavirus.html

Marshall, Matthew C. 2005. "Diabetes in African Americans." *Postgraduate Medical Journal* 81 (962):734–740. https://doi.org/10.1136/pgmj.2004.028274

Martin, Emily. 2009. *Bipolar Expeditions.* Princeton University Press.

Massey, Alexander. 1996. "Using the Literature: 3 x 4 Analogies." *The Qualitative Report* 2 (4):1–5. https://doi.org/10.46743/2160-3715/1996.2052

Masters, Ryan K., Bruce G. Link, and Jo C. Phelan. 2015. "Trends in Education Gradients of 'Preventable'Mortality: A Test of Fundamental Cause Theory." *Social Science and Medicine* 127:19–28.

Matricardi, Paolo M., Roberto W. Dal Negro, and Roberto Nisini. 2020. "The First, Holistic Immunological Model of COVID‐19: Implications for Prevention, Diagnosis, and Public Health Measures." *Pediatric Allergy and Immunology* 31 (5):454–470. https://doi.org/10.1111/pai.13271

Mays, Glen P., Paul K. Halverson, Edward L. Baker, Rachel Stevens, and Julie J. Vann. 2004. "Availability and Perceived Effectiveness of Public Health Activities in the Nation's Most Populous Communities." *American Journal of Public Health* 94 (6):1019-1026. https://doi.org/10.2105/AJPH.94.6.1019

McBean, A. M., Shuling Li, David T. Gilbertson, and Allan J. Collins. 2004. "Differences in Diabetes Prevalence, Incidence, and Mortality Among the Elderly of Four Racial/Ethnic Groups: Qhites, Blacks, Hispanics, and Asians." *Diabetes Care* 27 (10):2317–2324.

Mensah, George A., Cashell Jaquish, Pothur Srinivas, George J. Papanicolaou, Gina S. Wei, Nicole Redmond, Megan C. Roberts, Cheryl Nelson, Larissa Aviles-Santa,

and Mona Puggal. 2019. “Emerging Concepts in Precision Medicine and Cardiovascular Diseases in Racial and Ethnic Minority Populations.” *Circulation Research* 125 (1):7–13. https://doi.org/10.1161/CIRCRESAHA.119.314970

Mirowsky, John, and Catherine E. Ross. 2015. “Education, Health, and the Default American Lifestyle.” *Journal of Health and Social Behavior* 56(3):297–306.

Mistry, Bhaven A., Maria R. D’Orsogna, and Tom Chou. 2018. “The Effects of Statistical Multiplicity of Infection on Virus Quantification and Infectivity Assays.” *Biophysical Journal* 114 (12):2974–2985. https://doi.org/10.1016/j.bpj.2018.05.005

Moore, John B., and Carl H. June. 2020. “Cytokine Release Syndrome in Severe COVID-19.” *Science* 368 (6490):473–474. https://doi.org/10.1126/science.abb8925

Morris, Alanna A., Yi‐An Ko, Sarah H. Hutcheson, and Arshed Quyyumi. 2018. "Race/Ethnic and Sex Differences in the Association of Atherosclerotic Cardiovascular Disease Risk and Healthy Lifestyle Behaviors." *Journal of the American Heart Association* 7 (10):e008250. https://doi.org/10.1161/JAHA.117.008250

Morris, Alanna A., Yi-An Ko, Sarah H. Hutcheson, Manik K. Gupta, and Arshed Quyyumi. 2017. "Race/Ethnic and Gender Differences in the Association of

Atherosclerotic Cardiovascular Disease Risk and Healthy Lifestyle Behaviors." *Circulation* 136 (suppl_1):A18865.

Morton, Rachael L., Iryna Schlackow, Natalie Staplin, Alastair Gray, Alan Cass, Richard Haynes, Jonathan Emberson, William Herrington, Martin J. Landray, and Colin Baigent. 2016. "Impact of Educational Attainment on Health Outcomes in Moderate to Severe CKD." *American Journal of Kidney Diseases* 67 (1):31–39. https://doi.org/10.1053/j.ajkd.2015.07.021

Mosites, Emily, Erin M. Parker, Kristie E. Clarke, Jessie M. Gaeta, Travis P. Baggett, Elizabeth Imbert, Madeline Sankaran, Ashley Scarborough, Karin Huster, and Matt Hanson. 2020. "Assessment of SARS-CoV-2 Infection Prevalence in Homeless Shelters—four US cities, March 27–April 15, 2020." *Morbidity and Mortality Weekly Report* 69 (17):521.

Mui, Paulani, Janice V. Bowie, Hee-Soon Juon, and Roland J. Thorpe Jr. 2017. "Ethnic Group Differences in Health Outcomes Among Asian American Men in California." *American Journal of Men's Health* 11 (5):1406–1414. https://doi.org/10.1177/1557988316664508

Muncan, Brandon. 2018. "Cardiovascular Disease in Racial/Ethnic Minority Populations: Illness Burden and Overview of Community-Based Interventions." *Public Health Reviews* 39 (1):1–11. https://doi.org/10.1186/s40985-018-0109-4

Mutambudzi, Miriam, Claire Niedwiedz, Ewan B. Macdonald, Alastair Leyland, Frances Mair, Jana Anderson, Carlos Celis-Morales, John Cleland, John Forbes, and

Jason Gill. 2021. "Occupation and Risk of Severe COVID-19: Prospective Cohort Study of 120 075 UK Biobank Participants." *Occupational and Environmental Medicine* 78 (5):307–314. https://doi.org/10.1101/2020.05.22.20109892

National Bureau of Economic Research. 2020. “Determination of the April 2020 Trough in US Economic Activity.” Accessed April 2021. https://www.nber.org/news/business-cycle-dating-committee-announcement-july-19-2021

Neagu, Oana M., Kai Michelsen, Jonathan Watson, Barrie Dowdeswell, and Helmut Brand. 2017. Addressing Health Inequalities by Using Structural Funds. A Question of Opportunities." *Health Policy* 121 (3):300–306 http://www.sciencedirect.com/science/article/pii/S0168851017300064.

New York State Department of Health. 2020. “Department of Health.” Accessed March 2021. https://www.health.ny.gov/

New York State Health Data. 2021. “Statewide COVID-19 Testing | State of New York” Accessed April 2021. https://health.data.ny.gov/Health/New-York-State-Statewide-COVID-19-Testing/xdss-u53e/data

Nguyen, Long H., David A. Drew, Mark S. Graham, Amit D. Joshi, Chuan-Guo Guo, Wenjie Ma, Raaj S. Mehta, Erica T. Warner, Daniel R. Sikavi, Chun-Han Lo, et al. 2020. "Risk of COVID-19 Among Front-line Health-Care Workers and the

General Community: A Prospective Cohort Study." *The Lancet Public Health* 5 (9):e475–e483. https://doi.org/10.1016/S2468-2667(20)30164-X

Nkansah-Amankra, Stephen, Samuel K. Agbanu, and Reuben J. Miller. 2013. "Disparities in Health, Poverty, Incarceration, and Social Justice Among Racial Groups in the United States: A Critical Review of Evidence of Close Links with Neoliberalism." *International Journal of Health Services* 43(2):217–240.

NYC Health. 2021. "COVID-19: Data." Accessed March 2021. https://www1.nyc.gov/site/doh/covid/covid-19-data.page

Olshansky, S. J., Toni Antonucci, Lisa Berkman, Robert H. Binstock, Axel Boersch-Supan, John T. Cacioppo, Bruce A. Carnes, Laura L. Carstensen, Linda P. Fried, and Dana P. Goldman. 2012. "Differences in Life Expectancy Due to Race and Educational Differences are Widening, and Many May Not Catch Up." *Health Affairs* 31 (8):1803–1813. https://doi.org/10.1377/hlthaff.2011.0746

Pan, Wei, Miyazaki, Yasuo, Tsumura, Hideyo, Miyazaki, Emi, and Yang, Wei. 2020. "Identification of county-level health factors associated with COVID-19 mortality in the United States." *Journal of Biomedical Research*, 34 (6), 437. https://doi.org/10.7555/JBR.34.20200129

Parola, Anna, and Jenny Marcionetti. 2021. "Youth Unemployment and Health Outcomes: The Moderation Role of the Future Time Perspective." *International Journal for Educational and Vocational Guidance*:1–19.

Pearce, Jamie, Karen Witten, Rosemary Hiscock, and Tony Blakely. 2007. "Are Socially Disadvantaged Neighbourhoods Deprived of Health-Related Community Resources?" *International Journal of Epidemiology* 36 (2):348–355. https://doi.org/10.1093/ije/dyl267

Peiris, David, Alex Brown, and Alan Cass. 2008. "Addressing Inequities in Access to Quality Health Care for Indigenous People." *Cmaj* 179 (10):985–986. https://doi.org/10.1503/cmaj.081445

Peterson, Lars E., and David G. Litaker. 2010. "County‐level Poverty is Equally Associated with Unmet Health Care Needs in Rural and Urban Settings." *The Journal of Rural Health* 26 (4):373–382.

Phelan, Jo C., and Bruce G. Link. 2005. "Controlling Disease and Creating Disparities: A Fundamental Cause Perspective." *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 60 (Special_Issue_2):S27–S33. https://doi.org/10.1093/geronb/60.special_issue_2.s27

Phelan Jo C., and Bruce G. Link. 2013. "Fundamental Cause Theory." In: Cockerham W. (eds) *Medical Sociology on the Move.* Springer, Dordrecht. https://doi.org/10.1007/978-94-007-6193-3_6

Phelan, Jo C., Bruce G. Link, Ana Diez-Roux, Ichiro Kawachi, and Bruce Levin. 2004. "Fundamental Causes" Of Social Inequalities in Mortality: A Test of The Theory." *Journal of Health and Social Behavior* 45 (3):265–285. https://doi.org/10.1177/002214650404500303

Phelan, Jo C., Bruce G. Link, and John F. Dovidio. 2008. "Stigma and Prejudice: One Animal Or Two?" *Social Science & Medicine* 67 (3):358–367.

Phelan, Jo C., Bruce G. Link, and Parisa Tehranifar. 2010. "Social Conditions as Fundamental Causes of Health Inequalities: Theory, Evidence, and Policy Implications." *Journal of Health and Social Behavior* 51 (1_suppl):S28–S40. https://doi.org/10.1177/0022146510383498

Pinhas-Hamiel, Orit, and Philip Zeitler. 2007. "Acute and Chronic Complications of Type 2 Diabetes Mellitus in Children and Adolescents." *The Lancet* 369 (9575):1823–1831. https://doi.org/10.1016/S0140-6736(07)60821-6

Polonijo, Andrea N., and Richard M. Carpiano. 2013. "Social Inequalities in Adolescent Human Papillomavirus (HPV) Vaccination: A Test of Fundamental Cause Theory." *Social Science and Medicine* 82:115–125. https://doi.org/10.1016/j.socscimed.2012.12.020

PPIC. 2021a. “PPIC Statewide Survey: Californians and Their Government.” Accessed April 2021. https://www.ppic.org/publication/ppic-statewide-survey-californians-and-their-government-september-2021/

PPIC. 2021b. “Who’s in Poverty in California?” Accessed May 2021. https://www.ppic.org/interactive/whos-in-poverty-in-california/

Price, James H., Jagdish Khubchandani, and Fern J. Webb. 2018. "Poverty and Health Disparities: What Can Public Health Professionals Do?" *Health Promotion Practice* 19(2):170–174. https://doi.org/10.1177/1524839918755143

Probst, Tahira M., Hyun J. Lee, and Andrea Bazzoli. 2020. "Economic Stressors and the Enactment of CDC-Recommended COVID-19 Prevention Behaviors: The Impact of State-Level Context." *Journal of Applied Psychology* 105 (12) https://doi.org/10.1037/apl0000797

Quinn, Sandra C., and Supriya Kumar. 2014. "Health Inequalities and Infectious Disease Epidemics: A Challenge for Global Health Security." *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 12 (5):263–273. https://doi.org/10.1089/bsp.2014.0032

Raifman, Matthew A., and Julia R. Raifman. 2020. "Disparities in the Population at Risk of Severe Illness from COVID-19 by Race/Ethnicity and Income." *American Journal of Preventive Medicine* 59 (1):137–139. https://doi.org/10.1016/j.amepre.2020.04.003

Reichard, Amanda, Hayley Stolzle, and Michael H. Fox. 2011. "Health Disparities Among Adults with Physical Disabilities or Cognitive Limitations Compared to Individuals With No Disabilities in the United States." *Disability and Health Journal* 4 (2):59–67. https://doi.org/10.1016/j.dhjo.2010.05.003

Robles, Priscila G., Dina Brooks, Roger Goldstein, Nancy Salbach, and Sunita Mathur. 2014. "Gender-Associated Differences in Pulmonary Rehabilitation Outcomes

in People with Chronic Obstructive Pulmonary Disease: A Systematic Review." *Journal of Cardiopulmonary Rehabilitation and Prevention* 34 (2):87–97. https://doi.org/10.1097/HCR.0000000000000018

Rohr, Jason R., Christopher B. Barrett, David J. Civitello, Meggan E. Craft, Bryan Delius, Giulio A. DeLeo, Peter J. Hudson, Nicolas Jouanard, Karena H. Nguyen, and Richard S. Ostfeld. 2019. "Emerging Human Infectious Diseases and the Links to Global Food Production." *Nature Sustainability* 2 (6):445–456. https://doi.org/10.1038/s41893-019-0293-3

Root, Elisabeth D. 2012. "Moving Neighborhoods and Health Research Forward: Using Geographic Methods to Examine the Role of Spatial Scale in Neighborhood Effects on Health." *Annals of the Association of American Geographers* 102 (5):986-995. https://doi.org/10.1080/00045608.2012.659621

Rotarou, Elena S., Dikaios Sakellariou, Emily J. Kakoullis, and Narelle Warren. 2021. "Disabled People in the Time of COVID-19: Identifying Needs, Promoting Inclusivity." *Journal of Global Health* 11. https://doi.org/10.7189/jogh.11.03007

Roxburgh, Susan. 2009. "Untangling Inequalities: Gender, Race, and Socioeconomic Differences in Depression 1." 24 (2):357–381. https://doi.org/10.1111/j.1573-7861.2009.01103.x

Rubin, Marcie S., Sean Clouston, and Bruce G. Link. 2014. "A Fundamental Cause Approach to the Study of Disparities in Lung Cancer and Pancreatic Cancer

Mortality in the United States." *Social Science and Medicine* 100:54–61. https://doi.org/10.1016/j.socscimed.2013.10.026

Rydland, Håvard T., Erling F. Solheim, and Terje A. Eikemo. 2020. "Educational Inequalities in High-vs. Low-Preventable Health Conditions: Exploring the Fundamental Cause Theory." *Social Science and Medicine* 267:113145. https://doi.org/10.1016/j.socscimed.2020.113145

Sampson, Robert J. 1997. "Collective Regulation of Adolescent Misbehavior: Validation Results from Eighty Chicago Neighborhoods." *Journal of Adolescent Research* 12 (2):227–244. https://doi.org/10.1177/0743554897122005

Sampson, Robert J. 2003. "The Neighborhood Context of Well-Being." *Perspectives in Biology and Medicine* 46 (3):S53–S64. https://doi.org/10.1001/archpsyc.62.5.554.

Sampson, Robert J., and W. B. Groves. 1989. "Community Structure and Crime: Testing Social-Disorganization Theory." *American Journal of Sociology* 94 (4):774–802. https://www.jstor.org/stable/2780858

Schusler, Tania, Leah Weiss, David Treering, and Earvin Balderama. 2018. "Research Note: Examining the Association Between Tree Canopy, Parks and Crime in Chicago." *Landscape and Urban Planning* 170:309–313.

Shah, Monica, Muskaan Sachdeva, and Roni P. Dodiuk-Gad. 2020. "COVID-19 and Racial Disparities." *Journal of the American Academy of Dermatology* 83 (1):e35. https://doi.org/10.1016/j.jaad.2020.04.046

Shaw, Clifford R., and Henry D. McKay. 1942. "Juvenile Delinquency and Urban Areas." In T. L. Anderson (Ed.), *Understanding deviance: Connecting classical and contemporary perspectives* (pp. 106–127). Routledge/Taylor & Francis Group.

Sherbourne, Cathy D., and Ron D. Hays. 1990. "Marital Status, Social Support, and Health Transitions in Chronic Disease Patients." *Journal of Health and Social Behavior* 31 (4):328–343. https://doi.org/10.2307/2136817

Shi, Yu, Xia Yu, Hong Zhao, Hao Wang, Ruihong Zhao, Qun Cai, Shanshan Sun, Hong Fang, Yijie Wang, and Zhangmin Hu. 2020. "Host Susceptibility to Severe COVID-19: A Retrospective Analysis of 487 Cases Outside Wuhan." https://doi.org/10.21203/RS.3.RS-16021/V1

Shin, Jong C., Mei-Po Kwan and Diana S. Grigsby-Toussaint. 2020. "Do Spatial Boundaries Matter for Exploring the Impact of Community Green Spaces on Health?" *International Journal of Environmental Research and Public Health* 17 (20):7529. https://doi.org/10.3390/ijerph17207529

Siahpush, Mohammad, Melanie A. Wakefield, Matt J. Spittal, Sarah J. Durkin, and Michelle M. Scollo. 2009. "Taxation Reduces Social Disparities in Adult Smoking Prevalence." *American Journal of Preventive Medicine* 36 (4):285–291. https://doi.org/10.1016/j.amepre.2008.11.013

Simons, Sereh M., Felix H. Cillessen, and Jan A. Hazelzet. 2016. "Determinants of a Successful Problem List to Support the Implementation of the Problem-Oriented Medical Record According to Recent Literature." *BMC Medical Informatics and Decision Making* 16 (1):1–9. https://doi.org/10.1186/s12911-016-0341-0

Sohn, Heeju. 2017. "Racial and Ethnic Disparities in Health Insurance Coverage: Dynamics of Gaining and Losing Coverage Over the Life-Course." *Population Research and Policy Review* 36 (2):181–201. https://doi.org/10.1177/0022146519899115

Stephens, Jessica, Samantha Artiga, and Julia Paradise. 2014. *Health Coverage and Care in the South in 2014 and Beyond.* Henry J. Kaiser Family Foundation Menlo Park, CA, USA

Stormacq, Coraline, Stephan Van den Broucke, and Jacqueline Wosinski. 2019. "Does Health Literacy Mediate the Relationship Between Socioeconomic Status and Health Disparities? Integrative Review." *Health Promotion International* 34 (5):e1–e17. https://doi.org/10.1093/heapro/day062.

Strutz, Kelly L., Amy H. Herring, and Carolyn T. Halpern. 2015. "Health Disparities Among Young Adult Sexual Minorities in the US." *American Journal of Preventive Medicine* 48 (1):76–88. https://doi.org/10.1016/j.amepre.2014.07.038

Syracuse University. 2020. Center on Disability and Inclusion. Accessed August 2021. https://docs.google.com/document/d/1zANu6t4DD13ddk_cbVjOPKomr4cb-RyLaOukcPNEd2k/edit

Tannis, Candace, Claudia Chernov, Sharon Perlman, Wendy McKelvey, and Amita Toprani. 2020. "Cardiovascular Health Risk Behaviors by Occupation in the NYC Labor Force." *Journal of Occupational and Environmental Medicine* 62 (9):757–763. https://doi.org/10.1097/JOM.0000000000001960

Templeton, Anne, Selin T. Guven, Carina Hoerst, Sara Vestergren, Louise Davidson, Susie Ballentyne, Hannah Madsen, and Sanjeedah Choudhury. 2020. "Inequalities and Identity Processes in Crises: Recommendations for Facilitating Safe Response to the COVID‐19 Pandemic." *British Journal of Social Psychology* 59 (3):674–685. https://doi.org/10.1111/bjso.12400

TDHSS. Texas Department of Health and State Service. 2020. “Texas COVID-19 Data.” Accessed March 2021. https://dshs.texas.gov/coronavirus/additionaldata.aspx

Texas Workforce Commission. 2021. “Texas Unemployment Rate Falls to 5.6 Percent in September.” Accessed October 2021. https://www.twc.texas.gov/news/texas-unemployment-rate-falls-56-percent-september

Thebault, Simon, Mohammad Abdoli, Seyed-Mohammad Fereshtehnejad, Daniel Tessier, Vincent Tabard-Cossa, and Mark S. Freedman. 2020. "Serum Neurofilament

Light Chain Predicts Long Term Clinical Outcomes in Multiple Sclerosis." *Scientific Reports* 10 (1):1–11. https://doi.org/10.1038/s41598-020-67504-6

Thompson, Alison E., Benjamin L. Ranard, Ying Wei, and Sanja Jelic. 2020. "Prone Positioning in Awake, Nonintubated Patients with COVID-19 Hypoxemic Respiratory Failure." *JAMA Internal Medicine* 180 (11):1537–1539. https://doi.org/10.1001/jamainternmed.2020.3030

Tobolowsky, Farrell A., Elysia Gonzales, Julie L. Self, Carol Y. Rao, Ryan Keating, Grace E. Marx, Temet M. McMichael, et al. 2020. "COVID-19 Outbreak Among Three Affiliated Homeless Service Sites—King County, Washington, 2020." *Morbidity and Mortality Weekly Report* 69 (17):523. https://doi.org/10.15585/mmwr.mm6917e2

Townsend, Matthew J., Theodore K. Kyle, and Fatima C. Stanford. 2020. "Outcomes of COVID-19: Disparities in Obesity and by Ethnicity/Race." *International Journal of Obesity.* 44:1807–1809. https://doi.org/10.1038/s41366-020-0635-2

Uchino, Bert N. 2006. "Social Support and Health: A Review of Physiological Processes Potentially Underlying Links to Disease Outcomes." *Journal of Behavioral Medicine* 29 (4):377–387. https://doi.org/10.1007/s10865-006-9056-5

Umberson, Debra. 1987. "Family Status and Health Behaviors: Social Control as a Dimension of Social Integration." *Journal of Health and Social Behavior* 28 (3):306–319. https://doi.org/10.2307/2136848

University of Utah. 2021. “Division of Infectious Diseases.” Accessed June 2021. https://medicine.utah.edu/internalmedicine/infectiousdiseases/

Upshaw, Jenica N., Brian Finkelman, Rebecca A. Hubbard, Amanda M. Smith, Hari K. Narayan, Linzi Arndt, Susan Domchek, Angela DeMichele, Kevin Fox, and Payal Shah. 2020. "Comprehensive Assessment of Changes in Left Ventricular Diastolic Function with Contemporary Breast Cancer Therapy." *JACC: Cardiovascular Imaging* 13 (1 Part 2):198–210. https://doi.org/10.1016/j.jcmg.2019.07.018

Upshaw, Tara L., Chloe Brown, Robert Smith, Melissa Perri, Carolyn Ziegler, and Andrew D. Pinto. 2021. "Social Determinants of COVID-19 Incidence and Outcomes: A Rapid Review." *PloS One* 16 (3):e0248336. https://doi.org/10.1371/journal.pone.0248336

U.S. Bureau of Labor Statistics. 2020. “Employment Recovery in the Wake of the COVID-19 Pandemic: Monthly Labor Review.” Accessed September 2021. https://www.bls.gov/opub/mlr/2020/article/employment-recovery.htm

U.S. Bureau of Labor Statistics. 2021. “Unemployment Rises in 2020, as the Country Battles the COVID-19 Pandemic.” Accessed July 2021. https://www.bls.gov/opub/mlr/2021/article/unemployment-rises-in-2020-as-the-country-battles-the-covid-19-pandemic.htm#:~:text=The%20unemployment%20rate%20fell%20to,at%20the%20end%20of%202019.

U.S. Census Bureau. 2021a. “Coronavirus (COVID-19) Pandemic.” Accessed September 2021. https://www.census.gov/topics/preparedness/events/pandemics/covid-19.html

U.S. Census Bureau. 2021b. “COVID-19 Demographic and Economic Resources.” Accessed March 2021. https://covid19.census.gov

U.S. Census Bureau. 2021c.” Quick Facts: California.” Accessed April 2021. https://www.census.gov/topics/preparedness/events/pandemics/covid-19.html

U.S. Census Bureau. 2021d. “Quick Facts: Texas.” Accessed April 2021. https://www.census.gov/quickfacts/TX

U.S. Department of Health & Human Services. 2021. “Impact on Racial and Ethnic Minorities.” Accessed September 2021. https://www.hiv.gov/hiv-basics/overview/data-and-trends/impact-on-racial-and-ethnic-minorities

Vancea, Mihaela, and Mireia Utzet. 2017. "How Unemployment and Precarious Employment Affect the Health of Young People: A Scoping Study on Social Determinants." *Scandinavian Journal of Public Health* 45 (1):73–84. https://doi.org/10.1177/1403494816679555

Veenstra, Gerry. 2000. "Social Capital, SES and Health: An Individual-Level Analysis." *Social Science and Medicine* 50 (5):619–629.

Vega, William A., Michael A. Rodriguez, and Elisabeth Gruskin. 2009. "Health Disparities in the Latino Population." *Epidemiologic Reviews* 31 (1):99–112. https://doi.org/10.1093/epirev/mxp008

Villalonga-Olives, Ester, Ichiro Kawachi, Josué Almansa, Claudia Witte, Benjamin Lange, Christiane Kiese-Himmel, and Nicole von Steinbüchel. 2014. "Pediatric Health-Related Quality of Life: A Structural Equation Modeling Approach." *PLoS One* 9 (11):e113166. https://doi.org/10.1371/journal.pone.0113166

Walker, Rebekah J., Brittany L. Smalls, Jennifer A. Campbell, Joni L. S. Williams, and Leonard E. Egede. 2014. "Impact of Social Determinants of Health on Outcomes for Type 2 Diabetes: A Systematic Review." *Endocrine* 47 (1):29–48. https://doi.org/10.1007/s12020-014-0195-0

Wallace, Cara L., Stephanie P. Wladkowski, Allison Gibson, and Patrick White. 2020. "Grief During the COVID-19 Pandemic: Considerations for Palliative Care Providers." *Journal of Pain and Symptom Management* 60 (1):e70–e76. https://doi.org/10.1016/j.jpainsymman.2020.04.012

Walsemann, Katrina M., and Bethany A. Bell. 2010. "Integrated Schools, Segregated Curriculum: Effects of Within-School Segregation on Adolescent Health Behaviors and Educational Aspirations." *American Journal of Public Health* 100 (9):1687-1695. https://doi.org/10.2105/AJPH.2009.179424

Wang, Manli, Ruiyuan Cao, Leike Zhang, Xinglou Yang, Jia Liu, Mingyue Xu, Zhengli Shi, Zhihong Hu, Wu Zhong, and Gengfu Xiao. 2020. "Remdesivir and Chloroquine Effectively Inhibit the Recently Emerged Novel Coronavirus (2019-nCoV) in vitro." *Cell Research* 30 (3):269-271. https://doi.org/10.1038/s41422-020-0282-0

Warner, Barbara D. 2003. "The Role of Attenuated Culture in Social Disorganization Theory." *Criminology* 41 (1):73-98. https://doi.org/10.1111/j.1745-9125.2003.tb00982.x

Weisburd, David, Elizabeth R. Groff, and Sue-Ming Yang. 2014. "The Importance of Both Opportunity and Social Disorganization Theory in a Future Research Agenda to Advance Criminological Theory and Crime Prevention at Places." *Journal of Research in Crime and Delinquency* 51 (4):499–508. https://doi.org/10.1177/0022427814530404

Wertheim, Joel O., Daniel K. Chu, Joseph S. Peiris, Sergei L. Kosakovsky Pond, and Leo L. Poon. 2013. "A Case for the Ancient Origin of Coronaviruses." *Journal of Virology* 87 (12):7039–7045. https://doi.org/10.1128/JVI.03273-12

WHO. (World Health Organization). 2021a. "COVID-19 Clinical Management: Living Guidance." https://www.who.int/publications/i/item/WHO-2019-nCoV-clinical-2021-1

WHO (World Health Organization). 2021b. "Coronavirus (COVID-19) Dashboard. (2020)." Accessed September 2021 from https://covid19.who.int/

Williams, David R., and Chiquita Collins. 2016. "Racial Residential Segregation: A Fundamental Cause of Racial Disparities in Health." *Public Health Reports*. https://doi.org/10.1093/phr/116.5.404

Wilson, George. 2007. "Racialized Life-Chance Opportunities Across the Class Structure: The Case of African Americans." *The Annals of the American*

Academy of Political and Social Science 609 (1):215–232. https://doi.org/10.1177/0002716206295331

Wilson, Nick, Lucy T. Barnard, Jennifer A. Summers, G. D. Shanks, and Michael G. Baker. 2012. "Differential Mortality Rates by Ethnicity in 3 Influenza Pandemics Over a Century, New Zealand." *Emerging Infectious Diseases* 18 (1):71. https://doi.org/10.3201/eid1801.110035

Woo, Daniel, Brett M. Kissela, Jane C. Khoury, Laura R. Sauerbeck, Mary A. Haverbusch, Jerzy P. Szaflarski, James M. Gebel, Arthur M. Pancioli, Edward C. Jauch, and Alexander Schneider. 2004. "Hypercholesterolemia, HMG-CoA Reductase Inhibitors, and Risk of Intracerebral Hemorrhage: A Case–Control Study." *Stroke* 35 (6):1360–1364. https://doi.org/10.1161/01.STR.0000127786.16612.A4

Worldometer. 2020. “United States COVID: 41,741,693 Cases and 677,017 Deaths.” Accessed September 2021. https://www.worldometers.info/coronavirus/country/us

World Economic Forum. 2021. “This is How Scientists Detect New Variants of COVID-19.” Accessed April 2021. https://www.weforum.org/agenda/2021/07/how-scientists-detect-new-covid-19-variants/

World Population Review. 2021a. “California Population 2021.” Accessed May 2021. https://worldpopulationreview.com/states/california-population

World Population Review. 2021b. “New York City, New York Population 2021.” Accessed May 2021. https://worldpopulationreview.com/us-cities/new-york-city-ny-population

World Population Review. 2021c. “US States- Ranked by Population 2021.” Accessed April 2021. https://worldpopulationreview.com/states

Xu, Yi, Xufang Li, Bing Zhu, Huiying Liang, Chunxiao Fang, Yu Gong, Qiaozhi Guo, et al. 2020. "Characteristics of Pediatric SARS-CoV-2 Infection and Potential Evidence for Persistent Fecal Viral Shedding." *Nature Medicine* 26 (4):502–505. https://doi.org/10.1038/s41591-020-0817-4

Xue, Yange, Tama Leventhal, Jeanne Brooks-Gunn, and Felton J. Earls. 2005. "Neighborhood Residence and Mental Health Problems of 5-to 11-year-olds." *Archives of General Psychiatry* 62 (5):554–563. https://doi.org/10.1001/archpsyc.62.5.554

Yang, Jee M., Hyun Y. Koh, Sung Y. Moon, In K. Yoo, Eun K. Ha, Seulgi You, So Y. Kim, Dong K. Yon, and Seung W. Lee. 2020. "Allergic Disorders and Susceptibility to and Severity of COVID-19: A Nationwide Cohort Study." *Journal of Allergy and Clinical Immunology* 146 (4):790–798. https://doi.org/10.1016/j.jaci.2020.08.008

Zavala, Valentina A., Paige M. Bracci, John M. Carethers, Luis Carvajal-Carmona, Nicole B. Coggins, Marcia R. Cruz-Correa, Melissa Davis, et al. 2021. "Cancer Health Disparities in Racial/Ethnic Minorities in the United States." *British*

Journal of Cancer 124 (2):315–332. https://doi.org/10.1038/s41416-020-01038-6

Zhan, Choujun, Chi K. Tse, Zhikang Lai, Tianyong Hao, and Jingjing Su. 2020. "Prediction of COVID-19 Spreading Profiles in South Korea, Italy and Iran by data-driven coding." *PloS One* 15 (7):e0234763 https://doi.org/10.1371/journal.pone.0234763

Zhang, Liqing, and Puay Y. Tan. 2019. "Associations Between Urban Green Spaces and Health are Dependent on the Analytical Scale and How Urban Green Spaces are Measured." *International Journal of Environmental Research and Public Health* 16 (4):578. https://doi.org/10.3390/ijerph16040578