EXPLORING THE IMPACTS OF STATE LEVEL INDICATORS AND COVID-19 RESPONSE MEASURES ON MENTAL HEALTH OUTCOMES AMONG ADULTS WITH MENTAL ILLNESS IN THE UNITED STATES

by

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ABSTRACT

ALEXANDRA PATTON. Exploring the Impacts of State-Level Indicators and COVID-19 Response Measures on Mental Health Outcomes Among Adults with Mental Illness in the United States. (Under the direction of DR. TERESA SCHEID)

The COVID-19 pandemic has exacerbated unmet mental health needs among adults in the U.S and resulted in significant strains on the U.S. healthcare system. This descriptive, quantitative study aims to investigate reports of unmet mental health needs among adults in the U.S. prior to, and after the onset of the COVID-19 (SARS-CoV-2) pandemic. The purpose of this study is to critically examine state level characteristics and public health response approaches to better understand the contributing factors to mental illness and unmet mental health needs in the U.S. The specific objectives of this study include 1) To create a comprehensive national, longitudinal database; 2) To investigate state level variability in regards to mental health outcomes, contrasting states with better and worse mental health indicators; 3) To examine COVID-19 response legislation on mental illness (specifically depression), contrasting states with more restrictive and less restrictive COVID-19 response measures, and 4) To provide an in-depth comparison of the best and worst ranked states.

A major component of this dissertation is the development of a comprehensive state-level database that links key state characteristics related to mental illness and COVID-19 response measures to aggregate individual self-report mental health data. The database (n=50) consists of 206 total variables sourced from 8 data sources. Descriptive statistics, frequencies, and bivariate analyses were run in SPSS Statistics 28 to determine if there were any correlations among state level characteristics, COVID-19 response measures, and unmet mental health needs. Findings suggest slight correlations among meso- and macrosystem level variables which could be indicative of the impacts of the COVID-19 pandemic on economic and mental health outcomes.

Economic characteristics at the macro-system level, such as household income and healthcare spending, look to be associated with better mental health rankings.

This dissertation research provides an original contribution to the field of public health as minimal existing literature pertaining to the influence of state level variability on mental illness and unmet mental health needs exists. This research also provides the groundwork for future studies to build upon the data collected on state level factors which influence mental health outcomes, and to explore the inter-relationships between the U.S. healthcare and economic systems. In terms of health policy, this data and subsequent research will provide guidance for improvements regarding mental health advocacy and reform efforts.

DEDICATION

I dedicate this work to persons with mental illness and to those who love them. I also dedicate this work to my grandfather. My biggest supporter and cheerleader, who gave his all to be here for me for this milestone. Thank you for always being our source of wisdom, solace, and protection. Thank you for inspiring my love for life and helping others. Thank you for raising me to never settle for less than I deserve, and to aim high with all that I do.

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LIST OF ABBREVIATIONS

AMI: Any Mental Illness

BIPOC: Black, Indigenous and People of Color

DHHS: Department of Health and Human Services

MHA: Mental Health America

NAMI: National Alliance on Mental Illness

NIMH: National Institute of Mental Health

OECD: The Organization for Economic Co-operation and Development

SAMHSA: Substance Abuse and Mental Health Services Administration

SGM: Sexual and Gender Minorities

SDOH: Social Determinants of Health

WHO: World Health Organization

CHAPTER 1: INTRODUCTION

1.1. Statement of Purpose

As the long-term psychological and social impacts of the COVID-19 (SARS-CoV-2) pandemic continue to unfold, current research has already found the pandemic to have significant adverse effects on mental health, contributing to an estimated 25 percent increase in rates of depression, as well as increased rates of anxiety, distress, fear, substance use, and suicidal behavior (Cullen et al., 2020; World Health Organization, 2022; Sher, 2020). According to Mental Health America (MHA) more than half of individuals with mental illness do not receive treatment (Mental Health America, 2022a). Additionally, the COVID-19 pandemic has exacerbated the need for mental health services, as well as decreased availability and access to them, further expanding this gap. This is a descriptive, quantitative study that aims to investigate reports of unmet mental health needs among adults in the U.S. prior to, and after the onset of the COVID-19 pandemic. This project utilizes a layered, multidisciplinary approach, by combining public health and public policy to better understand the influences of state level characteristics and COVID-19 response measures on unmet mental health needs and other mental health outcomes at the state level. A major component of this dissertation is the development of a comprehensive state level database that links key state characteristics related to mental illness and COVID-19 response measures to aggregate individual self-report mental health data. This database is a valuable tool, as a nominal amount of publicly available resources are available that combine mental health and state level longitudinal data (e.g., economic, policy), especially in the context of the pandemic.

The purpose of this study is to critically examine state level characteristics and public health response approaches to better understand the contributing factors to mental illness and

unmet mental health needs in the U.S. The specific objectives of this study include 1) To create a comprehensive national, longitudinal database, 2) To investigate state level variability in regards to mental health outcomes, contrasting states with better and worse mental health measures, 3) To examine COVID-19 response legislation on mental illness (depression), contrasting states with more restrictive and less restrictive COVID-19 response measures, and 4) To provide an in-depth comparison of the best and worst ranked states. This study is grounded in theory by utilizing the Wholistic Framework for Mental Health (Scheid & Smith, 2021), which includes the macrosystem (e.g., state-level indicators), mesosystem (e.g., produces unmet mental health needs, COVID-19 response measures), and microsystem levels (e.g., individual self-report health data), and the Stress Process Model as its foundation.

This dissertation research provides an original contribution to the field of public health as minimal existing literature pertaining to the influence of state level variability on mental illness and unmet mental health needs exists. This research also provides the groundwork for future studies to build upon the data collected on state level indicators, which influence mental health outcomes, and to explore the inter-relationships between the U.S. healthcare and economic systems. In terms of health policy, this data and subsequent research will provide guidance for improvements regarding mental health advocacy and policy reform efforts.

1.2. Key Terms

For purposes of my dissertation, an unmet mental health need can be described as a perceived need for mental health treatment or counseling that was either never received, or the care that was received was inadequate (MHA, 2022a; Rens et al., 2020). MHA denotes mental health treatment or counseling as having received inpatient treatment or counseling, outpatient care treatment or counseling, or having used prescription medication for problems with emotions,

nerves, or mental health (MHA, 2022a). I will also be referring to mental health conditions as 'mental illness or any mental illness (AMI)' throughout my dissertation, as it is the same terminology that MHA uses to describe these conditions (MHA, 2022a). AMI can be defined as "having a diagnosable mental, behavioral, or emotional disorder, other than a developmental or substance use disorder" (Substance Abuse and Mental Health Administration, 2021). It is an umbrella term that encompasses conditions ranging from mild to moderate to severe including depression, anxiety disorders, mood disorders, and eating disorders (U.S. Department of Health and Human Services, 2022; U.S. National Library of Medicine, 2022). In my dissertation, I examined adults with AMI ranging from mild to moderate, a key measure from MHA's 2022 State of Mental Health in America report (MHA, 2022a). More specifically, I examined self-report mental health data of depression obtained from MHA's mental health screening tests. These screening tests include adults with mild and moderate mental illness and exclude adults with serious mental illness (MHA, 2022a). Important to note, those with unmet mental health needs also include individuals with serious mental illness. The National Institute of Mental Health defines a serious mental illness (SMI) as a "mental, behavioral, or emotional disorder resulting in serious functional impairment, which substantially interferes with or limits one or more major life activities" (U.S. DHHS, 2022). SMIs account for 300 mental illnesses in The Diagnostic and Statistical Manual of Mental Disorders (DSM) and includes disorders such as bipolar disorder, major depressive disorder, obsessive-compulsive disorder (OCD), panic disorder, post-traumatic stress disorder (PTSD), borderline personality disorder, schizophrenia, and schizoaffective disorder (SMI Adviser, 2021; U.S. Department of Veteran Affairs, n.d.). Those with serious mental illness essentially constitute a smaller subgroup that falls under the category of AMI but trends more towards the severe side of the scale (U.S. DHHS, 2022).

Although I do not plan to look at SMI specifically in my dissertation, this definition is important to include in order to differentiate between mild, moderate, and severe types of mental illness, and because individuals with SMI have been significantly impacted by the COVID-19 pandemic and unmet mental health needs.

1.3. Background and Significance

According to the National Alliance on Mental Illness (NAMI), more than 21 percent of U.S. adults experienced a mental illness in 2020 (National Alliance on Mental Illness, 2021). Additionally, approximately 5.6 percent of U.S adults experienced a serious mental illness (SMI) (please reference section 1.2. for key terms) (NAMI, 2021), creating a significant economic burden in the U.S. (The White House, 2022b). Young adults ages 18-25 years have the highest rates of mental illness in the U.S., with 30.6 percent of diagnoses occurring among this group (U.S. Department of Health and Human Services, 2022). These numbers have also increased substantially due to the COVID-19 pandemic (World Health Organization, 2022). Recently, the U.S. has acknowledged the mental health crisis, as increasing rates of depression, anxiety, suicide, drug use, and overdose deaths persist. President Biden emphasized the national mental health crisis as his primary concern in his 2022 Presidential Address, followed by the opioid epidemic (The White House, 2022).

Individuals with mental illness are at a significantly higher risk of experiencing poorer physical health outcomes such as an increased risk for chronic disease including diabetes, heart disease, stroke, cancer, and premature death (Office of Disease Prevention and Health Promotion, n.d.-a). Contextual factors related to the social determinants of health (SDOH) such as rates of unemployment, homelessness, and discontinued education are disproportionately higher among individuals with mental illness compared to those without (NAMI, 2021). These

factors are also associated with higher rates of COVID-19 cases, hospitalizations, and deaths among racial and ethnic minority groups (National Center for Immunization and Respiratory Diseases, 2020). The intersectionality of multiple inequities such as sexual orientation, gender identity, or race/ethnicity, can cause further disadvantages and discrimination. This may increase psychological distress, and ultimately lead to poorer physical and mental health outcomes (Shangani et al., 2020). Moreover, understanding the contextual and social stressors unique to each of these subgroups is an integral part of comprehending the mental health impacts of COVID-19, as well as other recent world events (Scheid & Smith, 2021).

The conceptual framework that guides this study was originally developed by Bronfenbrenner (1979) and was known as the ecological systems theory (Bronfenbrenner, 1979). The model was further refined to produce the Social Ecological Model of Health which is a framework that is widely used today to facilitate research, prevention, and intervention efforts (CDC, 2007). The model was then later adapted by Scheid & Smith (2021) to create the Wholistic Framework for Mental Health which is used today to describe the individual, community, and societal context of mental health to inform mental health advocacy and policy efforts (Scheid & Smith, 2021). The Wholistic Framework for Mental Health helps illustrate some of the social determinants of health (SDOH) factors that influence mental health outcomes at each of these levels, and helps aid in understanding the unique needs of a population (Scheid & Smith, 2021; Office of Disease Prevention and Health Promotion, n.d.-b). Figure 1 depicts the key concepts related to the SDOH contextual factors at the individual level that I included in this study. As illustrated, an individual's environment including their neighborhood and built environment, social and community context, and economic stability are important factors in understanding the context of the individual and risk for mental illness. For instance, individuals

who have lower income, less education, inadequate housing, or experience stigma or discrimination are at higher risk for developing mental illness (Office of Disease Prevention and Health Promotion, n.d.-b; Coombs et al., 2021; Yoon et al., 2019; Unite for Sight, n.d.). Additionally, they may also face challenges in accessing healthcare services due to lack of insurance, which can also exacerbate their mental health conditions.

Figure 1.

Diagram of the social determinants of health and the general individual level concepts that were included in this study. (Office of Disease Prevention and Health Promotion, n.d.-b)

Accessing affordable, quality mental health care can be a significant burden for individuals with mental illness in the U.S. (NAMI, n.d.-b). According to the Substance Abuse and Mental Health Services Administration (SAMSHA) 48 percent of individuals with AMI and a perceived unmet need for mental health services did not receive any mental health services in the past year (SAMSHA, 2021). Without treatment, individuals are at a higher risk of experiencing, homelessness, incarceration, emergency visits, comorbid health conditions, and

suicide (NAMI, 2021). Barriers to mental health care directly reflect upon the SDOH and include social stigmas, affordability (e.g., financial barriers, insurance), accessibility (e.g., transportation), limited availability of services (e.g., long waiting times, unavailable services), and insufficient mental health care policies (Coombs et al., 2021; Yoon et al., 2019; Unite for Sight, n.d.). Additionally, low perceived need, desire to handle the problem on one's own, lack of knowledge about where to go for services, and time have been found to be contributing factors to increased reports of unmet mental health needs (Christidis, Linn, & Stamm, 2018; Mojtabai et al., 2011). The COVID-19 pandemic is an additional contextual stressor that has drastically influenced mental illness and access to care by delaying treatment and exacerbating poor mental health outcomes (Pfefferbaum & North, 2020). The pandemic has heightened unmet health needs in the U.S. by not only increasing the need for mental health services but also decreasing availability and access to them.

Important to understanding unmet needs is the stigma associated with mental illness. Research has found that stigma and discrimination towards individuals with mental illness can lead to higher rates of unmet health needs and delayed care (American Psychiatric Association, 2020). Moreover, stigma can exacerbate psychiatric symptoms and contribute to feelings of increased stress, reduced hope, lower self-esteem, and difficulties with social and work relationships (APA, 2020; Stangl et al., 2019). Not only can mental health stigma have a drastic effect on an individual, but it remains pervasive among political and government systems (The Lancet, 2016). Institutional or structural stigma can be defined as "societal-level conditions, cultural norms, and institutional practices that constrain the opportunities, resources, and well-being for stigmatized populations (Hatzenbuehler & Link, 2014). Without governmental resources and adequate community-based care and support services, increased reports of unmet

health needs and disengagement from care are inevitable (Yang et al., 2017; O'Brien, Fahmy, & Singh, 2009). Stigma, more specifically institutional or structural stigma, can greatly reduce the willingness of policymakers to adopt mental health legislation and allocate resources, which can drastically affect the availability of mental health care and support services (APA, 2020; Yang et al., 2017; The Lancet, 2016; Jenkins, 2003).

1.4. Socioeconomic and Health Disparities

Unique health disparities should be considered when it comes to mental health treatment in the U.S. African American individuals, men, young adults, and older adults who are at a disproportionately higher risk of experiencing mental illness and poorer mental health outcomes. These populations are also less likely to receive necessary treatment. Racial/ethnic and sexual and gender minority (SGM) individuals are more likely to experience substantially higher rates of poor mental health outcomes and less likely to receive mental health care (American Psychiatric Association, n.d.). Although advancements in treatments and medications continue to progress, effective treatments are only accessible and utilized by a small percentage of individuals. For instance, 48 percent of White individuals received mental health services, whereas only 31 percent of Black and Hispanic individuals, and 22 percent of Asian individuals received care in 2015 (Agency for Healthcare Research and Quality, 2016). Not receiving treatment can exacerbate psychiatric symptoms and lead to poorer physical and mental health outcomes, such as chronic health conditions or premature death (Massie, 2020).

Adults with mental illness are often more likely to face economic disparities including income inequality and homelessness (Patel et al., 2018; Levin, Hennessy, & Petrila, 2010). Mental illnesses are also one of the leading causes of disability, which can lead to decreased wages or the inability to work at all (Levin, Hennessy, & Petrila, 2010). These factors can

decrease accessibility and affordability of mental health treatment services due to increased financial barriers (Sadowska, n.d.). Insurance coverage can also have a significant effect on quality of care received, as this influences access and options for treatment (e.g., Medicaid versus private coverage). Additionally, research has found that access to mental health care is associated with socioeconomic status (e.g., middle and upper class) and race/ethnicity (Sadowska, n.d.).

The intersectionality of multiple stigmatized identities can increase the impact of stigma, racism, and discrimination on the individual. Black, Indigenous and People of Color (BIPOC) and SGM individuals face the largest number of barriers to accessing quality care (NAMI, 2020). Ethnic minority individuals are at a disproportionately higher risk of experiencing symptoms that are undiagnosed, under-diagnosed, or misdiagnosed due to cultural and linguistic barriers (American Psychological Association, n.d.). People with mental illness tend to face higher rates of stigma in health care, education, and employment (Cummings et al., 2013). Stigma and discrimination can lead to a greater risk of experiencing unmet health needs and delayed care, especially for those facing the intersection of multiple stigmatized identities (APA, 2020). It is important to recognize the importance of SDOH and health disparities for understanding mental health. The purpose of this study is to critically examine state level characteristics and explore some of these SDOH factors to better understand the contributing factors to mental illness and unmet mental health needs in the U.S.

CHAPTER 2: CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

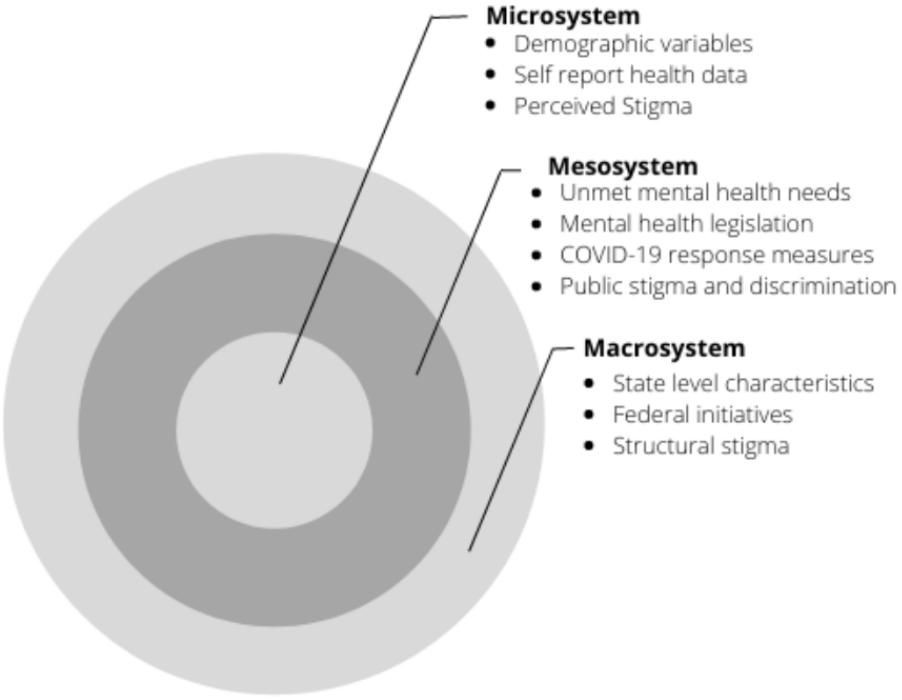
2.1. The Wholistic Framework for Mental Health

The Wholistic Framework for Mental Health was developed by Scheid and Smith (2021) to illustrate the macrosystem, mesosystem, and microsystem levels of social systems which influence both mental health care and mental health justice (Scheid & Smith, 2021). The framework is important to this study as it helps to provide context for the cultural and societal factors that may influence an individual's experience with mental illness and unmet mental health needs (Scheid, 2015). It also helps delineate the intricate ways that political and economic systems, cultural beliefs, stigma, health care, social supports, and mental health outcomes are interconnected (Scheid, 2015).

I modified this model to provide a framework for my research (Figure 2). At the macrosystem level, I examined **state-level characteristics** (e.g., socioeconomic variables, political party) that influence the prevalence of mental illness and unmet mental health needs in the U.S. A resulting factor of these state-level functions occurs within the mesosystem level, which can lead to **counts of COVID-19 cases, COVID-19 deaths, and unmet mental health needs**. Other factors within this level I explored include **mental health legislation and COVID-19 response measures**. At the microsystem level, I examined **self-report health data on depression**. Figure 2 (Scheid & Smith, 2021), describes the relationship between the macrosystem, mesosystem, and microsystem levels as they apply to unmet mental health needs among adults with AMI in the U.S, as described above. These constructs help guide my research questions and investigation of state representative estimates of mental illness and unmet mental health needs, as well as further exploring the contextual factors that may be contributing to individuals experiencing them.

Figure 2.

Conceptual diagram of the Wholistic Framework for Mental Health as it applies to unmet mental health needs among adults with AMI in the U.S. (Scheid & Smith, 2021)



State level characteristics such as economic, social, and cultural factors can have a drastic influence on mental illness and unmet mental health needs (Scheid & Smith, 2021; Office of Disease Prevention and Health Promotion, n.d.-b). The economic prosperity of a state (i.e., employment opportunities) can influence mental health, as people living in economically disadvantaged areas may experience more stress, financial insecurity, and less access to healthcare (therefore, increasing the disparity of unmet mental health needs) (Venkataramani et al., 2020). States with higher rates of unemployment, poverty, and income inequality may have higher rates of mental illness (Knifton & Inglis, 2020; Pickett et al., 2006), especially in the context of COVID-19 which has amplified the impacts of many of these factors. Moreover, cultural attitudes and beliefs can also affect these outcomes (Scheid, 2015). States with

stigmatizing and discriminating attitudes towards mental illness (Scheid, 2015) can contribute to increased rates of untreated mental illness and increase the prevalence of unmet mental health needs. These states may also be less likely to move forward with mental health or stigma reduction legislation, resulting in less protective legislation that aims to improve mental health and access to care. It is also important to consider the effects of COVID-19 and COVID-19 response legislation, as the pandemic has increased stress for people in several ways. Some of the factors contributing to increased stress include: fear and uncertainty, social isolation, and economic hardship (Lu & Lin, 2021; Fofana et al., 2020; Clemente-Suárez et al., 2021). The increase in stress can amplify psychiatric symptoms and lead to poorer physical and mental health outcomes (Massie, 2020) as well as increase the risk for the onset of mental illness.

2.2 The Stress Process Model

The Stress Process Model is a foundational theory that was originally developed by Pearlin (1981) and colleagues to illustrate how life events, chronic life strains, self-concepts, and social supports assemble together as the process of stress (Pearlin et al., 1981). This theory is important to understanding the contextual factors and inequities that can influence individuals' risk for mental illness at the macro-, meso- and microsystem levels, such as experiences with stigma and discrimination, unemployment, inadequate housing, or other disparities among the social determinants of health (SDOH) (Scheid & Smith, 2021; APA, 2020; Office of Disease Prevention and Health Promotion, n.d.-a). The COVID-19 pandemic has also perpetuated additional stressors such as illness, death, and economic hardship, as well as secondary stressors including social isolation, disruptions to daily life, and uncertainty about the future (Clemente-Suárez et al., 2021). The Stress Process Model suggests that individuals who experience these stressors may be at an increased risk of developing mental illness such as anxiety, depression,

and post-traumatic stress disorder (Schneiderman et al., 2005; Clemente-Suárez et al., 2021). Moreover, the pandemic has disproportionately impacted marginalized communities, exacerbating pre-existing health disparities and increasing stressors such as discrimination and other systemic inequalities (Andraska et al., 2021; Vasquez Reyes, 2020). Protective factors such as social support, access to healthcare, and effective coping mechanisms are crucial in mitigating the negative impact of stressors related to the pandemic on mental health outcomes (Dailey et al., 2022; Li et al., 2021). Overall, the Stress Process Model provides a framework for understanding the complex and dynamic interactions between stressors, individual and environmental factors, and mental health outcomes (Scheid, 2021) especially in the context of the COVID-19 pandemic.

The Stress Process Model also has important implications for mental health policy. Policies that promote social support, such as programs that provide support for mental health services for low-income individuals, can help to mitigate the negative effects of stress on mental health (Thoits, 2010). Additionally, policies that address social inequalities, such as those that promote income equality and reduce stigma and discrimination, can also have a positive impact on mental health outcomes (Thotis, 2010). One example of a mental health policy that is informed by the Stress Process Model is related to Medicaid expansion under the Affordable Care Act (ACA). The ACA includes provisions that promote access to mental health services and support for individuals with mental illness (NAMI, 2020). Additionally, the ACA includes provisions that address social inequality, such as provisions that promote health equity and reduce mental health disparities (NAMI, 2020). This legislation will be further explored throughout my dissertation. Important to note, individuals who have intersecting sources of marginalization can experience amplified effects of these mental health disparities due to multiple stressors, which should be explored further in the context of the Stress Process Model.

2.3. Literature Review

Mental illness is on the rise in the U.S (The White House, 2022a). According to the National Institute of Mental Health (NIMH), an estimated 57.8 million adults in the U.S. experienced a mental illness in 2021 (U.S. Department of Health and Human Services, 2022). Approximately 50 percent of women and 33 percent of men reported worsening mental health since the start of the pandemic (The White House, 2022b). Despite the high prevalence of mental illnesses, many individuals in the U.S. experience unmet mental health needs. According to a report by MHA, 57 percent of adults with a mental illness did not receive treatment in 2019 (MHA, 2021). This indicates a significant gap between the need for mental health services and the availability of them (MHA, 2021). Several factors contribute to unmet mental health needs in the U.S. One significant cause is the lack of access to mental health services. According to a report from the American Medical Association, approximately 60 percent of U.S. counties do not have a single practicing psychiatrist (New American Economy, 2017). Additionally, rural areas often face greater shortages of mental health professionals than urban areas, which can make it more difficult for individuals to access mental health treatment (New American Economy, 2017; Morales et al., 2020). Another factor contributing to unmet mental health needs is stigma surrounding mental illness. A study consisting of 90,000 participants worldwide, found that individuals reported the stigma of mental illness as one of the top reasons for not seeking treatment (Krans, 2018). Stigma can also lead to discrimination in healthcare settings especially among those facing the intersectionality of multiple stigmatized identities, which can make individuals hesitant to seek care (NAMI, 2020; APA, 2020).

Additionally, researchers have found significant disparities related to the intersectionality of the SDOH and unmet mental health needs. Jang et al. (2019) explored mental health service

use and perceived unmet needs for mental health care among Asian Americans in the U.S. and found that the prevalence of mental distress and SMI (44% and 6%, respectively) were significantly higher than nationally representative reports from the U.S. general population (18% and 3%, respectively) (Jang et al., 2019). Only 23 percent of respondents reported seeking mental health treatment in the past 12 months for their emotional, mental, and personal needs, most likely contributing to approximately 7 percent of the overall sample reporting perceived unmet needs of mental health care (Jang et al., 2019). The sample in this study exhibited poorer mental health outcomes and substantially lower use of specialty mental health care, and higher levels of perceived unmet mental health needs when compared to the general population (Jang et al., 2019). It is imperative for future studies to explore the cultural and environmental circumstances of mental health service utilization (Jang et al., 2019). It may be beneficial for forthcoming studies to examine these contextual factors through the lens of the Wholistic Model for Mental Health and the Stress Process Model to gain a better understanding of the social factors and inequities influencing individuals' risk for mental illness and need for mental health services.

Moreover, a study conducted by Walker et al. (2015) explored the associations among national estimates of mental disorders and service use, unmet health needs, and barriers to mental health treatment among adults in the U.S. (Walker et al., 2015). Researchers found that individuals with mental disorders were more likely to be uninsured or covered by Medicaid, compared to individuals without (Walker et al., 2015). Insurance status was found to be a significant contributing factor to receiving mental health treatment and for perceived unmet needs (Walker et al., 2015). The majority of participants who perceived an unmet need for mental health treatment indicated structural barriers, such as treatment cost, and attitudinal

barriers, such as stigma, as reasons for not receiving treatment (Walker et al., 2015). Future research and interventions should explore culturally tailored interventions as well as contextual factors to enhance access and quality of care measures for mental health treatment (Walker et al., 2015).

2.4. Gaps in the Literature

To my knowledge, no other studies have explored the associations between state-level characteristics and COVID-19 on unmet mental health needs among adults in the U.S., as well as the contextual factors that may be contributing to individuals' reports of mental illness. Significant gaps are present in the literature related to understanding the contextual experiences (e.g., culture, environment) of individuals reporting unmet mental health care needs, such as the influence of state-level legislation and COVID-19 response measures (Ji et al., 2021). Moreover, current research could be enhanced by providing a more detailed understanding of the impacts of the COVID-19 pandemic and Stress Process Model on the mechanisms of the Wholistic Framework (Scheid & Smith, 2021). Additionally, a study by Montez et al. (2021) that is designed similarly to this study, suggests the need a stronger focus on the structural factors that shape population health (Montez et al., 2021). They draw on the framework of social ecology to show how health behaviors are influenced by macro-, meso-, and microsystem levels. At the macrosystem level, the researchers identify components of the U.S. political environment such as liberal labor and environmental policies, and civil rights policies across the U.S. and 17 countries that are part of the Organization for Economic Co-operation and Development (OECD). At the mesosystem level, the authors explore the impacts of socioeconomic status, race disparities, income inequality, and the rising costs of medical care in the U.S. Finally, they explore the rising rates of mortality and morbidity at the microsystem level.

Another important study to note is by Homan et al. (2021) that explores the Intersectionality Theory as it relates to systems of oppression (i.e., stigma). The researchers examine structural intersectionality at the macrosystem level by examining state level indicators related to sexism, racism, and income quality and linking them to individual self-reported health data (Homan et al., 2021). Both of these research articles are important to this study as they serve as models for the design of the study as well as help drive the study's research questions. Although some research related to the macro-, meso-, and microsystem level influences on health exists, limited research related to these factors in the context of mental health and the COVID-19 pandemic is available. Further, only recently has preliminary research about the impacts of COVID-19 on unmet mental health needs started to emerge, which identifies a strong association between an increased need for mental health services, as well as decreased availability and access to them.

This descriptive, quantitative study uses secondary data to help bridge the gaps in the literature by providing a more robust understanding of the associations between state-level indicators and COVID-19 response measures on unmet mental health needs, and by delineating the factors that may be contributing to mental illness, such as depression. It also helps bring awareness to the gaps in policies (i.e., stigma legislation) that are essential in addressing the health inequities that marginalized communities often face in regard to unmet mental health needs. The purpose of this study is to critically examine state level characteristics and public health response approaches to better understand the contributing factors to mental illness and unmet mental health needs in the U.S.

CHAPTER 3: METHODOLOGY AND DATA

The purpose of this study is to critically examine state level characteristics and public health response approaches to better understand the contributing factors to mental illness and unmet mental health needs in the U.S. The objective of this chapter is to create a comprehensive national, longitudinal database. This valuable tool combines mental health and state level longitudinal data (e.g., economic, policy), prior to and after the onset of the pandemic. It is used to address the research objectives of this study and can serve as a resource for future studies to build upon. Additionally, I included my researcher statement and rationale for this study in Appendix C.

3.1. Research Objectives

The research objectives of this study include 1) To create a national, longitudinal database (addressed in this chapter), 2) To investigate state level variability in regards to mental health outcomes, contrasting states with better and worse mental health measures, 3) To examine COVID-19 response legislation on mental illness (depression), contrasting states with more restrictive and less restrictive COVID-19 response measures, and 4) To construct an in-depth comparison of the best and worst ranked states, overall. These objectives will be examined from the macrosystem, mesosystem, and microsystem levels of the Wholistic Framework, to gain a better understanding of the cultural, societal, and individual level factors that influence stress processes and mental health outcomes (Scheid, 2015).

3.2. Longitudinal Database

The first objective of this study was to create a national, longitudinal database. The database was constructed from secondary data collected from 2015-2021, and sourced from the National Alliance on Mental Illness (NAMI), Mental Health America (MHA), the National

Conference on State Legislatures (NCSL), the U.S. Census, the Worldometer COVID-19 dashboard, the Centers for Medicare & Medicaid Services, the Federal Reserve Bank of St. Louis, and the Kaiser Family Foundation. These sources are leaders in mental health policy research and initiatives, nonpartisan legislation, and population-based research. I chose each of these sources based on my variables of interest, and the public data they had available on their online websites. The variables of interest were defined based on the background research, current events (COVID-19 pandemic), and the Wholistic Framework of Mental Health. The variables examined at the macrosystem level are state-level characteristics (e.g., socioeconomic variables, political party) that may influence the prevalence of mental illness and unmet mental health needs in the U.S. A resulting factor of these state-level functions occurs within the mesosystem level, which can lead to counts of COVID-19 cases, COVID-19 deaths, and unmet mental health needs. Other factors within this level I explored include mental health legislation and COVID-19 response measures. At the microsystem level, I examined self-report health data on depression.

The database is organized by state (n=50) and consists of state level characteristics including socioeconomic and political data, state level action on COVID-19, COVID-19 case rates, and COVID-19 death rates. In terms of mental health, the database includes state level estimates of the prevalence of AMI, estimates of adults with AMI reporting unmet mental health needs, and aggregate individual self-report data of depression by state. All data was input and stored in SPSS Statistics Version 28. The total database consists of 206 total variables sourced from 8 data sources.

I created a matrix in Excel to organize state characteristics, legislative data, state representative estimates of AMI and reports of unmet health needs, and self-reported data on depression. I then arranged states to compare state variability, by organizing them based on states

with higher or lower prevalence rates of AMI, unmet mental health needs, and self-reported data on depression. In this instance, I specifically looked at data from 2019 and 2020 to compare differences prior to, and after the onset of COVID-19 pandemic. Unfortunately, the depression screening data obtained from MHA does not include a pre-covid (prior to 2019) dataset as the screening tests began in 2020. This limitation will be further addressed in Chapter 5. I further organized the states by frequency of COVID-19 cases and death rates and compared the COVID-19 response legislation of states with higher rates to the response measures in states with lower rates. All of these data were from 2020. Important to note, that although stigma is also an important indicator to consider, there are no known measures of stigma at any of the three levels of the Wholistic Framework for Mental Health so therefore it was not included as an indicator for this particular study.

3.3. Data Sources

Mental Health America

Mental Health America (MHA) is a national community-based nonprofit organization whose mission is to promote mental health and wellness for everyone. The group specializes in prevention, intervention, and enhancing integrative care practices (Mental Health America, n.d.). The organization has over 200 partners nationwide and aims to help share the stories of those with lived experience with mental illness (MHA, n.d.). At the state level, the two key indicators explored throughout this study were estimates of the prevalence of adults with AMI and the prevalence of adults with AMI reporting unmet needs. The state representative estimate data (e.g., prevalence of AMI, prevalence of unmet health needs) was sourced from the 2020 State of Mental Health in America Report and includes data from 2015 to 2020 (MHA, 2022). The data for these indicators was originally collected by the 2019 SAMHSA, Center for Behavior Health

Statistics and Quality, National Survey on Drug Use and Health (Substance Abuse and Mental Health Data Archive, 2019) and later analyzed and disseminated by MHA (MHA, 2022). At the individual level, the key indicator used in this study is aggregate, individual self-report data on depression. This data was sourced from MHA's mental health screening tests dataset (a newer health screening tool provided by the organization) and includes data from 2020 to 2022.

National Alliance on Mental Illness

The National Alliance on Mental Illness (NAMI) is the largest grassroots mental health organization in the U.S. (NAMI, n.d.). With more than 48 state organizations and 600 affiliates, the association strives to improve the lives of individuals with mental illness through education, advocacy, and support in communities (NAMI., n.d.). NAMI also aids in providing pertinent research and information to individuals and families related to advancements in treatments and policy reform (NAMI., n.d.). The state-level legislation data for this study, related to Medicaid and state-regulated health insurance coverage, was sourced from the 2019 National Alliance on Mental Illness State Legislation Report on trends in state mental health policy and include data from 2013 and 2019 (NAMI, 2020). I chose to include this policy indicator because it has a significant influence on the accessibility and affordability of health care (especially as it relates to insurance) and therefore, can be considered to be a potential contributing factor to unmet health needs.

National Conference of State Legislatures

The National Conference on State Legislatures (NCSL) is a national bipartisan organization that represents all states and territories of the United States, as well as legislatures involving the federal government (National Conference on State Legislatures, 2022). The state

governor party data for this study was sourced from NCSL's 2015-2022 State and Legislative Partisan Composition data (NCSL, 2022).

U.S. Census Bureau

The U.S. Census Bureau is a federal agency that is one of the largest sources of data pertaining to the people and economy of the U.S. and is responsible for conducting the census every ten years to gather information about demographic, economic, and population characteristics (U.S. Census Bureau, 2022). The state population estimates and percent poverty rates were sourced from the U.S. Census Bureau data for this study and include data from 2015 to 2021 (U.S. Census Bureau, 2022).

Worldometer COVID-19 Dashboard

The Worldometer COVID-19 dashboard is a resource that synthesizes thousands of sources to provide aggregate real-time data about COVID-19 total cases and total deaths globally. The resource is utilized by leading agencies including Johns Hopkins, as well as international governments and media outlets (Worldometer, n.d.). Data from the dashboard is also used in books and published journal articles, making it a credible source for up-to-date COVID-19 data and information (Worldometer, n.d.). The total number of COVID-19 cases and the total number of COVID-19 deaths data included in this study were sourced from the COVID-19 dashboard on July 18, 2022.

Centers for Medicare & Medicaid Services

The Centers for Medicare & Medicaid Services (CMS) is a division of the Department of Health and Human Services and provides data on Medicare, Medicaid/CHIP, and private insurance. (Centers for Medicare & Medicaid Services, n.d.-a). Their public database includes data related to CMS program use & payments, provider characteristics, and beneficiary

characteristics. The personal and hospital healthcare expenditures were sourced from the CMS data for this study and include data from 2015 to 2020 (CMS, n.d.-a).

Federal Reserve Economic Data

The Federal Reserve Economic Data (FRED) is an online database that consists of economic data from public and private data sources nationally and internationally (Federal Reserve Economic Data, n.d). The database utilizes secondary sources and is updated and maintained by the Federal Reserve Bank of St. Louis (FRED, n.d). The median household income estimates were sourced from FRED for this study and include data from 2015 to 2020 (FRED, n.d).

Kaiser Family Foundation

The Kaiser Family Foundation (KFF) is a national bipartisan nonprofit organization that specializes in public health issues and health policy analysis (Kaiser Family Foundation, 2020). Their database consists of indicators such as the Affordable Care Act, health status, disparities, etc. Unemployment rate by state, COVID-19 response legislation (face masks, emergency declarations, and stay-at-home orders), and demographic estimates (sex, age, and race/ethnicity) were sourced from KFF for this study (KFF, 2020).

3.4. Operational Definitions

Macrosystem Level Variable Operational Definitions

State Level Characteristics. The state-level characteristics that are included in the database consist of governor party, health care expenditures (by personal health care and hospital services), average household income, percent poverty, percent unemployment, and population estimates (age, race, ethnicity, sex).

Mesosystem Level Variable Operational Definitions

Adults with Any Mental Illness (AMI). The adults with AMI indicator is defined by MHA as "having a diagnosable mental, behavioral, or emotional disorder, other than a developmental or substance use disorder, assessed by the Mental Health Surveillance Study (MHSS) Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (MHSS-SCID), which is based on the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)" (MHA, 2022). Data for this measure was originally sourced from the 2019 National Survey on Drug Use and Health which includes data survey years 2018-2019 (SAMHDA, 2019; MHA, 2022). These data were obtained from MHA's 2020 State of Mental Health in America Report and consist of representative estimates of the prevalence of adult AMI by all 50 states. (Mental Health America, 2022).

Adults with AMI Reporting Unmet Need. The adults with AMI reporting unmet health needs indicator is defined by MHA as "feeling a perceived need for mental health treatment/counseling that was not received." MHA indicates mental health treatment or counseling as having received inpatient treatment/counseling or outpatient care treatment/counseling or having used prescription medication for problems with emotions, nerves, or mental health (MHA, 2022). Data for this measure was originally sourced from the 2019 National Survey on Drug Use and Health which includes data survey years 2018-2019 (SAMHDA, 2019; MHA, 2022). These data were obtained from MHA's 2020 State of Mental Health in America Report and consist of representative estimates of the prevalence of adults with AMI reporting unmet health needs by all 50 states (Mental Health America, 2022).

Medicaid and State-Regulated Health Insurance Coverage. As of February 2023, only 39 states in the U.S. have approved Medicaid expansion under the Affordable Care Act (ACA), which is a vital part of enhancing healthcare coverage and affordability for individuals with mental illness

(NAMI, 2020). Although the majority of legislation reform included in this report regarding Medicaid and state-regulated health insurance coverage was minimal, these policy changes are an integral component of this database, to better understand access to care measures based on insurance and healthcare coverage (NAMI, 2020). This policy indicator is operationalized by mapping the 39 states who have approved Medicaid expansion and identifying potential associations with rates of depression. These data were obtained from NAMI's 2019 National Alliance on Mental Illness State Legislation Report.

State Action on COVID-19. State action on the COVID-19 pandemic refers to state-level COVID-19 public health response approaches and legislation that were implemented to help mitigate the spread of disease. More specifically, this study includes legislative action related to mask mandates, vaccine requirements, and length of state home orders (Kaiser Family Foundation, 2021).

COVID-19 Total Cases and Total Deaths. Total cases refers to the reported total cumulative count of detected and confirmed positive and probable cases of COVID-19 as of July 18, 2022 (Worldometer, n.d.). Total deaths refers to the total cumulative count of deaths reported that have been confirmed or deemed probable to be caused by COVID-19 as of July 18, 2022.

Microsystem Level Variable Operational Definitions

Mental Health Screening Tests. MHA offers 11 free, confidential online mental health screening tests including depression, psychosis, PTSD, addiction, depression, tests for new and expecting parents, bipolar, anxiety, eating disorders, youth mental health, as well as a new parent, and workplace mental health tests for individuals seeking mental health information and resources through their website. For this study, I specifically examined self-reported data on depression, which uses the validated PHQ-9 (depression) scale and Likert-style questions to measure the risk

for depression (MHA, 2022). These data were obtained from MHA's mental health screening tests dataset.

3.5. Variables

The codebook and additional information about each of the key variables in this study are located in Appendix C. The variables of interest, type of variables, codes, and ranges included in the database are listed in Table 1 below.

Table 1. *Variables of interest, type of variables, codes, and ranges included in the database.*

Variable	Variable Type	Code	Range
Macrosystem Level			
States	Nominal	State Abbreviations	-
Governor Party	Categorical	1: Republican 2: Democratic 3: Independent	-
Health Expenditures – Personal Healthcare 2019	Continuous	-	379,715 – 5,866
Health Expenditures – Personal Healthcare 2020		-	405,451 – 6,399
Percent Poverty 2019	Continuous	-	19.2 – 3.7
Percent Poverty 2020	Continuous	-	17.5 – 6.2
Average Household Income 2019	Continuous	-	96,765 – 45,346
Average Household Income 2020	Continuous	-	94,384 – 44,966
Unemployment Rate 2019	Continuous	-	0.06 – 0.02
Unemployment Rate 2020	Continuous	-	0.15 – 0.04
Mesosystem Level			
Adults with Any Mental Illness (AMI)	Continuous	-	22.6 – 15.5

State Prevalence Estimates 2019			
Adults with Any Mental Illness (AMI) State Prevalence Estimates 2020	Continuous	-	25.0 – 16.2
Adults with AMI Reporting Unmet Need State Prevalence Estimates 2019	Continuous	-	26.2 – 15.8
Adults with AMI Reporting Unmet Need State Prevalence Estimates 2020	Continuous	-	31.2 – 14.3
Medicaid Expansion Legislation	Categorical	1: Not moving forward with expansion 2: Debate is ongoing 3: Moving forward with expansion	-
State Action on COVID-19 - Statewide Face Mask Requirement	Categorical	1: No 2: Unvaccinated people only 3: Indoor only	-
State Action on COVID-19 – Emergency Declaration	Categorical	1: No 2: Yes	-
State Action on COVID-19 – Stay at Home Order	Categorical	1: No 2: Yes	-
Total COVID-19 Case Counts (as of July 18, 2022)	Continuous	-	10,452,333 – 136,695
Total COVID-19 Death Counts (as of July 18, 2022)	Continuous	-	93,121 - 688
Microsystem Level			
Individual Self-Reports of Depression 2020	Continuous	-	71.2 – 27.1

3.6. Data Analysis

The specific research questions that were examined throughout this analysis include,

RQ1: What is the prevalence of AMI and unmet mental health needs among adults in the U.S. by state, and how do the states rank comparatively to one another?

RQ2: How do these states rank comparatively to one another prior to, and after the onset of the COVID-19 pandemic?

RQ3: How does aggregate individual self-report health data (on depression) vary based on state variability in regards to state-level characteristics and relevant COVID-19 response legislation?

RQ4: What factors might be contributing to reports of mental illness and how do these vary by state – further examining the best and worst ranked states, overall?

For RQ1, simple descriptive statistics (i.e. frequencies, means, and standard deviations) are reported for the aggregate level data (n=50 states) to provide summary data and also to provide a baseline for comparison of individual states. For the state ranking analyses (RQ2 and RQ3), I utilized a matrix in Excel to organize the states (n=50) by the prevalence of AMI and unmet health needs in 2019 and 2020. I then sorted the states by highest prevalence of AMI and highest prevalence of unmet health needs to lowest prevalence of AMI and lowest prevalence of unmet health needs for both 2019 and 2020. To examine relationships among self-reported data on depression and state variability (RQ3a), I separated the research questions into two parts 1) examining state variability by state-level characteristics at the macro- and mesosystem levels and 2) examining state variability by COVID-19 response legislation (face masks, emergency declarations, and stay at home orders). For the final research question (RQ4) I conducted an in-depth analysis of two states that were manually selected based on their consistent ranking (being in the top 5 best or top 5 worst rankings) across all findings from the other research questions.

Descriptive statistics, frequencies, and bivariate analyses were run in SPSS Statistics Version 28 to determine if there were any correlations among the variables. Finally, for my fourth research question I chose two states that had the greatest variability in the prevalence of AMI and unmet health needs (the best and worst ranked) and created an additional matrix in Excel to compare state variability among characteristics for each state.

3.7. Ethical Considerations

No ethical considerations are present in this study, as it uses publicly available secondary data sources including NAMI, MHA, NCSL, the U.S. Census, the Worldometer COVID-19 dashboard, the Centers for Medicare & Medicaid Services, the Federal Reserve Bank of St. Louis, and the Kaiser Family Foundation. This study does not involve primary research with human subjects, so therefore is exempt from Institutional Review Board review and approval.

CHAPTER 4: FINDINGS

This chapter provides a comparative analysis of state mental health, political and socioeconomic data to contrast the states with better and worse mental health measures, and to better understand the contributing factors to AMI and unmet mental health needs in the U.S. The objectives of this study are to 1) To create a national, longitudinal database (Chapter 3), 2) To investigate state level variability in regards to mental health outcomes, contrasting states with better and worse mental health measures, 3) To examine COVID-19 response legislation on mental illness (depression), contrasting states with more restrictive and less restrictive COVID-19 response measures, and 4) To provide an in-depth comparison of the best and worst ranked states. The specific research questions examined pertaining to each of these objectives are

RQ1: What is the prevalence of AMI and unmet mental health needs among adults in the U.S. by state, and how do the states rank comparatively to one another? (Objective 2)

RQ2: How do these states rank comparatively to one another prior to, and after the onset of the COVID-19 pandemic? (Objective 2)

RQ3: How does aggregate individual self-report health data (on depression) vary based on state variability in regards to state-level characteristics and relevant COVID-19 response legislation? (Objective 3)

RQ4: What factors might be contributing to reports of mental illness and how do these vary by state – further examining the best and worst ranked states, overall? (Objective 4)

Each of the states was ranked by prevalence of AMI and unmet health needs, and then sorted by highest prevalence of AMI and highest prevalence of unmet health needs to lowest prevalence of AMI and lowest prevalence of unmet health needs for both 2019 and 2020.

Descriptive statistics, frequencies, and bivariate analyses were run in SPSS Statistics Version 28 to determine if there were any correlations among the variables.

The socioeconomic factors that were included in the analysis are average household income, percent poverty rate, and personal healthcare expenditures by state. I also explored indicators including government party, Medicaid expansion legislation, COVID-19 response legislation, and COVID-19 cases and deaths. I chose to include these variables as they providesmore context about the impacts of certain factors at each of the macro- (i.e., state level characteristics such as personal healthcare expenditures by state), meso- (i.e, unmet mental health needs) and micro-system (i.e., social determinants of health) levels, especially within the context of COVID-19.

The descriptive statistics of the continuous and categorical variables of interest used in the analysis, including the range, mean, standard deviation, and frequencies (categorical variables only) are listed in Table 2 and Table 3 below. The data included in these table are representative of aggregate state-level data. As indicated in Table 2 the macrosystem variables are: personal healthcare expenditures, percent poverty, household income, and unemployment rates and includes state data at an aggregate level. The average cost of personal healthcare expenditures across all 50 states was $63,307.20 prior to the pandemic in 2019 (Range: $5,866 – $379,715, SD=$71,694.4) and $66,951.60 after the onset of the pandemic in 2020 (Range: $6,399 – $405,451, SD: $76,253.50). The increase in healthcare expenditures across states, could imply that there was a greater need for healthcare services due to the pandemic. Additionally, the average percent poverty rate across states was 10.2 percent in 2019 (Range: 3.7% - 19.2%, SD: 3.0%) and increased to 11.1 percent in 2020 (Range: 6.2% – 17.5%, SD: 2.7%). The increase in poverty rates could be indicative of the large number of individuals who experienced loss of

employment and income during the COVID-19 shut down and stay at home orders. Moreover, the average household income across the U.S. was $70,116.70 in 2019 (Range: $45,346 - $96,765, SD: $11,484.50) and decreased to $67,909.90 in 2020 (Range: $44,966 - $94,384, SD: $11,519.80). The decrease in average household income could also be representative of the economic impacts of the pandemic. Finally, the average unemployment rate in 2019 was 4.0 percent (Range: 2.0% – 6.0%; SD: 0.8%) and increased to 7.0 percent in 2020 (Range: 4.0% – 15.0%; SD: 2.2%). The increase in unemployment rates could likely be attributed to the economic context of the pandemic as well.

In regards to the mesosystem level variables, the prevalence of AMI across states in 2019 was 18.7 percent (Range: 15.5% – 22.6%, SD: 1.7%) and increased to 19.3 percent (Range: 16.2% – 25.0%, SD: 1.9%) in 2020. This finding confirms additional conclusions from other researchers about the impacts of the COVID-19 pandemic such as the increase in mental illness. Additionally, reports of unmet mental health needs were 20.1 percent in 2019 (Range: 15.8% – 26.2%, SD: 2.4%) and increased to 22.5 percent (Range: 14.3% – 31.2%, SD: 3.2%) in 2020 which can also be indicative of the impacts of the pandemic on mental illness as well as the increased need of mental health services and lack of availability. In total (as of Jul 18, 2022) there was an average of 1,776,958 cases (Range: 136,695 - 10,452,333, SD: 2,004,888.9) and 20,349 deaths (Range: Range: 688 - 93,121, SD: 21,999.3) in the U.S.

Finally, at the microsystem level, individual examined self-reported data on depression was examined, which uses the validated PHQ-9 (depression) scale and Likert-style questions to measure the risk for depression (MHA, 2022). These data were obtained from MHA's mental health screening tests dataset who collected this data through a convenience sample of phone and website participants. The average rate of self-reported risk for depression across states in 2020

was 37.6 percent. Unfortunately, there were no previous year's data to compare these depression rates to, but it they are applied in the context of the sociopolitical environment of the pandemic in Objective II below.

Table 2. *Descriptive statistics of the continuous variables of interest used in the analysis.*

Variable	Minimum	Maximum	Mean	Std. Deviation
Macrosystem Level				
Health Expenditures – Personal Healthcare 2019 ($)	5,866	379,715	63,307.2	71,694.4
Health Expenditures – Personal Healthcare 2020 ($)	6,399	405,451	66,951.6	76,253.5
Percent Poverty 2019 (%)	3.7	19.2	10.2	3.0
Percent Poverty 2020 (%)	6.2	17.5	11.1	2.7
Average Household Income 2019 ($)	45,346	96,765	70,116.7	11,484.5
Average Household Income 2020 ($)	44,966	94,384	67,909.9	11,519.8
Unemployment Rate 2019 (%)	0.02	0.06	0.04	0.008
Unemployment Rate 2020 (%)	0.04	0.15	0.07	0.022
Mesosystem Level				
Adults with Any Mental Illness (AMI) State Prevalence Estimates in 2019 (%)	15.5	22.6	18.7	1.7
Adults with Any Mental Illness	16.2	25.0	19.3	1.9

(AMI) State Prevalence Estimates in 2020 (%)				
Adults with AMI Reporting Unmet Need State Prevalence Estimates in 2019 (%)	15.8	26.2	20.1	2.4
Adults with AMI Reporting Unmet Need State Prevalence Estimates in 2020 (%)	14.3	31.2	22.5	3.2
Total COVID-19 Case Counts (as of July 18, 2022)	136,695	10,452,333	1,776,958.4	2,004,888.9
Total COVID-19 Death Counts (as of July 18, 2022)	688	93,121	20,349.3	21,999.3
Microsystem Level				
Individual Self-Reports of Depression in 2020 (%)	27.1	71.2	37.6	6.5

In summary, all of the macrosystem level variables including healthcare expenditures, percent poverty, and unemployment rates increased between 2019 and 2020. The only macrosystem level variable to decrease during this time is average household income which decreased from $70,116.70 to $67,909.90 (SD = $11,484.50 and $11,519.80, respectively) between these years. This can likely be attributed to the economic impacts of COVID-19 and the pandemic response legislation implemented across the nation, such as stay at home orders and vaccine mandates. The mesosystem level variables are also indicative of potential impacts of the COVID-19 pandemic, as the percentages of AMI and unmet mental health needs also increased

between 2019 and 2020. The average percent of AMI increased by 0.6, from 18.7 percent in 2019 to 19.3 percent in 2020 (SD=1.7 and 1.9, respectively) while the percent of unmet mental health needs increased by 2.4, from 20.1 percent to 22.5 percent (SD=2.4 and 3.2, respectively). These findings confirm previous research related to the adverse effects of the pandemic on mental health as well as could imply that the increase in unmet mental health heads could be attributed to an increased need for mental health care during the pandemic and decreased access to healthcare services. Finally, at the microsystem level, the rate of self-reported depression (37.6%) across states could also signify the impacts of COVID-19 on individuals increased risk for depression due to the increased stress and other contextual factors of the pandemic.

The categorical variables of interest that were used in this analysis are governor party, Medicaid expansion legislation in 2019, and state action on COVID-19 including statewide face mask requirements, emergency declarations, and stay at home orders. The data included in these table are representative of aggregate state-level data. As indicated in Table 3 the macrosystem variable that was included is governor party. In 2019, 50.9 percent of governors in the U.S. were Republican whereas 43.4 percent were Democratic. This shifted slightly in 2020, with one state flipping to blue which decreased the percentage of Republican state governors to 49.1 percent and increased the percentage of Democratic governors to 45.3 percent. At the mesosystem level, the majority of states (71.7%) decided to move forward with Medicaid expansion in 2019 whereas 22.6% decided not to move forward. In the context of COVID-19, the majority of states did not implement statewide face mask requirements (79.2%) whereas 11.3 percent of states implemented them for unvaccinated people only and 3.8 percent implemented them for indoor facilities only. Additionally, 45.3 percent of states implemented an emergency declaration during the pandemic while 49.1 percent chose not to. Moreover, 83.0 percent of states implemented a

mandatory stay at home order during the onset of the pandemic while 11.3 percent of states did not implement this mandate.

Table 3. *Descriptive statistics of the categorical variables of interest used in the analysis.*

Variable	Code	Frequency	Percent (%)
Macrosystem Level			
Governor Party in 2019	1: Republican 2: Democratic 3: Independent	1: 27 2: 23 3: 0	1: 50.9 2: 43.4 3: 0
Governor Party in 2020	1: Republican 2: Democratic 3: Independent	1: 26 2: 24 3: 0	1: 49.1 2: 45.3 3: 0
Mesosystem Level			
Medicaid Expansion Legislation in 2019	1: Not moving forward with expansion 2: Debate is ongoing 3: Moving forward with expansion	1: 12 2: 0 3: 38	1: 22.6 2: 0 3: 71.7
State Action on COVID-19 - Statewide Face Mask Requirement	1: No 2: Unvaccinated people only 3: Indoor only	1: 42 2: 6 3: 2	1: 79.2 2: 11.3 3: 3.8
State Action on COVID-19 – Emergency Declaration	1: No 2: Yes	1: 26 2: 24	1: 49.1 2: 45.3
State Action on COVID-19 – Stay at Home Order	1: No 2: Yes	1: 6 2: 44	1: 11.3 2: 83.0

In summary, the majority of states in the U.S. have Republican governors, decided to move forward with Medicaid expansion legislation in 2019. Additionally, most states (83.0%) implemented stay at home orders during the pandemic. These legislative changes can influence mental illness and unmet health needs in two ways 1) by expanding healthcare coverage and increasing access to care (2019 Medicaid Expansion), and 2) adversely affecting mental health due to increases in stress and social isolation because of the COVID-19 pandemic and response

legislation (COVID-19 response legislation). It is important to consider both protective and harmful legislation in the context of mental illness and unmet mental health needs to gain a better understanding of what factors may be influencing mental illness and unmet needs. To further explore these assumptions and the contributing factors to AMI and unmet mental health needs in the U.S, I examined political and socioeconomic state level data to contrast the states with better and worse mental health measures.

4.1. Research Objectives and Questions

Objective II: To investigate state level variability in regard to mental health outcomes, contrasting states with better and worse mental health measures.

For this objective, the prevalence of AMI and unmet mental health needs (mesosystem level) in 2019 and 2020 were examined to compare the differences in these variables that could be attributed to COVID-19. The research questions that were examined throughout this objective include:

RQ1-a: What is the prevalence of AMI and unmet mental health needs among adults in the U.S. by state, and how do the states rank comparatively to one another?

RQ1-b: How do these states rank comparatively to one another prior to, and after the onset of the COVID-19 pandemic?

The expectations of this objective are that states with a higher prevalence of mental illness will also have higher rates of unmet mental health needs. There is also an assumption that these rates will be higher after the onset of the pandemic, respectively.

Table 4 and Table 5 in Appendix B exhibit the rankings of each state by the prevalence of AMI and unmet mental health needs among adults in the U.S. by state in 2019 and 2020, respectively. These years were chosen as 2019 is indicative of the timeframe prior to the onset of

the pandemic and 2020 is representative of the time during (or after onset) of the pandemic. Unfortunately, no data illustrative of the post-pandemic time frame was available during the development phase of the data database created for this study. Each of the states in the tables is ranked by highest prevalence of any mental illness and highest level of unmet mental health needs (ranked as #1) to the lowest prevalence of any mental illness and lowest level of unmet mental health needs (ranked as #50), respectively. States with lower rankings (#1-25) have a greater prevalence of mental illness and unmet mental health needs than states with higher rankings (#26-50) (MHA, 2022).

Prior to the onset of the COVID-19 pandemic (in 2019), the states with the highest prevalence of mental illness include Oregon (22.6%), Utah (22.3%), Kentucky (22.1%), Idaho (21.6%), and Arkansas (21.0%). These states provide an interesting contrast positioned for further examination as, in 2019, at the macrosystem level, Oregon had a democratic governor whereas Utah, Kentucky, Idaho, and Arkansas had republican governors. Kentucky had spent the most on personal healthcare expenditures allocating $43,579 for personal healthcare disbursements, followed by Oregon ($40,623), Arkansas ($26,744), Utah ($8,627), and Idaho ($13,817). Kentucky ranked 23rd in highest spent for personal healthcare expenditures out of all 50 states. Utah had the highest average household income at $85,578, ranking number seven out of all 50 states. It also had one of the lowest poverty rates at 7.3 percent. Alternatively, Arkansas had the lowest average household income at $55,220, which positioned its rank to be number 46 for average household income when compared to all other states. It also had the highest poverty rate at 14.1 percent. Furthermore, all of these states had voted to move forward with the 2019 Medicaid expansion.

The states with the highest prevalence of unmet mental health needs include Nevada (26.2%), New Hampshire (25.1%), Oregon (24.9%), Idaho (24.7%), and Indiana (24.5%). In 2019, Nevada and Oregon had a democratic governor, whereas New Hampshire, Idaho, and Indiana each had a republican governor. The healthcare spending was across the board among states, with Indiana spending the most on personal healthcare expenditures at $66,818 followed by Oregon ($40,623), Nevada ($25,079), New Hampshire ($15,391), and Idaho ($13,817). These states ranked a lot lower in healthcare expenditures with Indiana ranking 16th out of all 50 states. New Hampshire had the highest average household income at $87,984 and the lowest poverty rate of all states at 3.7 percent. Alternatively, Idaho had the lowest average household income at $66,812, and a poverty rate of 7.1 percent. In addition, all of these states had voted to move forward with the 2019 Medicaid expansion.

The states with the lowest prevalence of mental illness include New Jersey (15.5%), Hawaii (15.6%), Illinois (15.7%), Texas (16.0%), Maryland (16.6%). During this time, New Jersey, Hawaii, and Illinois had a democratic governor whereas Texas and Maryland both had republican governors. Texas spent the most on personal healthcare expenditures allocating $232,714 for personal healthcare disbursements, followed by Illinois ($120,291), New Jersey ($100,152), Maryland ($62,052), and Hawaii ($13,526). Texas ranked third in highest spend for personal healthcare expenditures out of all of the other 50 states. Out of the group, Maryland had the highest average household income at $96,765, ranking number one overall. It also had one of the lowest poverty rates at 7.0 percent. Alternatively, Texas had the lowest average household income at $68,286 and a poverty rate of 11.1 percent. All of these states rank in the top 26 states for highest average household income. Furthermore, all of these states voted to move forward with the 2019 Medicaid expansion, except for Texas.

The states with the lowest unmet mental health needs include Hawaii (15.8%), Alabama (16.6%), Texas (16.7%), Nebraska (17.0%), and Maine (17.3%). Hawaii and Maine both had a democratic governor whereas Texas, Alabama, and Nebraska all had republican governors. Texas spent the most on personal healthcare expenditures allocating $232,714 for personal healthcare disbursements, followed by Alabama ($42,903), Nebraska ($19,166), Maine ($15,461), and Hawaii ($13,526). Hawaii had the highest average household income at $89,105, ranking number two overall. It also had one of the lower poverty rates at 8.4 percent. Alternatively, Alabama had the lowest average household income at $56,901 and a poverty rate of 12.9 percent. Furthermore, Hawaii, Nebraska, and Maine voted to move forward with the 2019 Medicaid expansion, while Texas and Alabama voted to not expand coverage.

In 2019, Oregon and Idaho were in the top 5 worst rankings for the highest prevalence of mental illness and unmet mental health needs. Meanwhile, Texas and Hawaii remained in the top 5 best rankings for lowest prevalence of mental illness and unmet health needs. Although no significant correlations are present, it seems as if some trends related to economic characteristics exist, including average household income and healthcare spending, as the states with higher average household incomes and higher healthcare expenditures, seem to have better overall mental health and unmet mental needs rankings. Additionally, there does not seem to be any direct correlations present related to governor party and Medicaid expansion legislation, other than democratic governors being more likely to vote for Medicaid expansion than republicans.

In relation to the time during (or after the onset) of the COVID-19 pandemic (in 2020), the states with the highest prevalence of mental illness include Idaho (25.0%), Oregon (23.6%), Utah (23.5%), West Virginia (22.9%), and Washington (22.8%). Idaho, Utah, and West Virginia all had a republican governor, whereas Oregon and Washington each had a democratic governor.

Washington spent the most on personal healthcare expenditures allocating $71,277 for personal healthcare disbursements, followed by Oregon ($42,716), Utah ($24,477), West Virginia ($22,790), and Hawaii ($14,886). Washington had the highest average household income at $81,083, ranking number eight overall. It also had one of the lower poverty rates at 8.3 percent. Alternatively, West Virginia had the lowest average household income at $51,615. In addition, all of these states had voted to move forward with the 2019 Medicaid expansion.

The states with the highest prevalence of unmet mental health needs include Utah (31.2%), New Hampshire (28.8%), Nevada (28.6%), Oregon (28.5%), and Virginia (28.3%). Utah and New Hampshire each had a republican governor, whereas Nevada, Oregon, and Virginia each had a democratic governor. Virginia spent the most on personal healthcare expenditures allocating $78,989 for personal healthcare disbursements, followed by Oregon ($42,716), Nevada ($26,200), Utah ($24,447), and New Hampshire ($16,113). New Hampshire had the highest average household income at $88,235, ranking number two overall. It also had the lowest poverty rate out of all the other states at 6.2 percent. Alternatively, Nevada had the lowest average household income at $60,956 and a poverty rate of 12.9 percent. Furthermore, all of these states had voted to move forward with the 2019 Medicaid expansion.

In contrast, the states with the lowest prevalence of mental illness include New Jersey (16.2%), Hawaii (16.3%), Texas (16.3%), Illinois (16.8%), and Maryland (16.9%). Texas and Maryland each had a republican governor, whereas New Jersey, Hawaii, and Illinois, all had a democratic governor. Texas spent the most on personal healthcare expenditures allocating $246,812 for personal healthcare disbursements (ranking third overall), followed by Illinois ($128,263), New Jersey ($105,416), Maryland ($65,641), and Hawaii ($14,480). New Jersey had the highest average household income at $85,239, ranking number four overall. It also had one of

the lower poverty rates at 8.2 percent. Alternatively, Texas a had the lowest average household income at $68,093 and a poverty rate of 14.0 percent. In addition, all of these states had voted to move forward with the 2019 Medicaid expansion, except for Texas.

The states with the lowest unmet mental health needs include Alabama (14.3%), Hawaii (14.7%), Iowa (18.2%), Wyoming (19.2%), and Texas (19.2%). Alabama, Iowa, Wyoming, and Texas all had a republican governor, whereas Hawaii had a democratic governor. Texas spent the most on personal healthcare expenditures allocating $246,812 for personal healthcare disbursements, followed by Alabama ($45,673), Iowa ($30,968), Hawaii ($14,480), and Wyoming ($6,399). Hawaii had the highest average household income at $80,729, ranking number nine overall. It also had a poverty rate of 10.9 percent. Alternatively, Alabama had the lowest average household income at $54,393 and a poverty rate of 14.9 percent. In addition, Iowa and Hawaii voted to move forward with the 2019 Medicaid legislation whereas Texas, Alabama, and Wyoming chose to not move forward with expansion. In 2020, Oregon and Utah were in the top 5 worst rankings for the highest prevalence of mental illness and unmet mental health needs. Meanwhile, Texas and Hawaii remained in the top 5 best rankings for lowest prevalence of mental illness and unmet health needs. The data shows minor associations among economic characteristics including average household income and healthcare spending and mental illness/unmet health needs, but does not show any significant changes related to the onset of the COVID-19 pandemic or notable changes between 2019 and 2020. It does seem that some slight increases among indicators such as the prevalence of mental illness, unmet mental health needs, average household income, and percent poverty that could potentially have been impacted by the pandemic. Overall, Oregon had the worst rankings in regard to the prevalence of mental illness and unmet mental health needs prior to, and after the onset of the COVID-19 pandemic.

Alternatively, Hawaii had the best overall rankings based on the prevalence of mental illness and unmet mental health needs prior to, and after the onset of the COVID-19 pandemic.

Objective III: To examine COVID-19 response legislation and mental illness (depression), contrasting states with more restrictive and less restrictive COVID-19 response measures.

For this objective, the macrosystem level variables examined include personal healthcare expenditures, hospital healthcare expenditures, state governor party, average household income, percent poverty, and unemployment rate. The variables examined at the mesosystem level in relation to self-reported rates of depression include the prevalence of adults with AMI, adults with AMI reporting unmet needs, and the most recent Medicaid expansion legislation. The variable examined at the microsystem level was self-reported rates of depression. All of the data examined was from 2020, which is consistent with the data available for self-reported rates of depression. Additionally, population estimates were controlled for throughout analysis as the self-reported rates of depression were per 100k individuals in the state. The research question that was examined throughout this objective includes:

RQ2-a: How does aggregate individual self-report health data (on depression) vary based on state variability in regard to state-level characteristics and relevant COVID-19 response legislation? The expectations of this objective are that there will be correlations between self-reported rates of depression and the macrosystem and mesosystem level variables indicated above.

Table 6 exhibits self-reported rates of depression in regard to state-level characteristics. The only correlation that was significantly associated with self-reported rates of depression in 2020 was at the mesosystem level and was with adults with AMI (P=0.03). This indicates that as the number of individuals scoring for severe depression on the mental health screening tests

(PHQ-9 scale - provided by MHA) increased, the prevalence of adults with AMI increased as well which supports current research findings. There were no significant correlations among macrosystem level variables including healthcare expenditures, governor party, average household income, percent poverty, or unemployment rates. This could indicate that it is difficult to make inferences about mental illness using a top-down approach (macrosystem to microsystem). Although none of the other variables resulted in significant correlations, there were negative correlations associated with personal healthcare expenditures, hospital healthcare expenditures, governor party, and unemployment rate which could be indicative of potential associations that may need to be further explored in greater detail.

Table 6. *Self-reported rates of depression by state variability in regard to state-level characteristics.*

	Self-Reports of Depression in 2020
Macrosystem Level	
Personal Healthcare Expenditures	
Pearson Correlation	-0.152
Significance (2-tailed)	0.291
Hospital Healthcare Expenditures	
Pearson Correlation	-0.153
Significance (2-tailed)	0.289
Governor Party	
Pearson Correlation	-0.257
Significance (2-tailed)	0.071
Average Household Income	
Pearson Correlation	0.065
Significance (2-tailed)	0.655
Percent Poverty	
Pearson Correlation	0.049
Significance (2-tailed)	0.736
Unemployment Rate	
Pearson Correlation	-0.045
Significance (2-tailed)	0.758
Mesosystem Level	
Adults with Any Mental Illness	
Pearson Correlation	0.305
Significance (2-tailed)	**0.031***

Adults with AMI Reporting Unmet Need	
Pearson Correlation	0.060
Significance (2-tailed)	0.679
Medicaid Expansion Legislation (2019)	
Pearson Correlation	0.092
Significance (2-tailed)	0.527

In addition, Table 7 below exhibits self-reported rates of depression in 2020 by COVID-19 response legislation. The COVID-19 legislation included statewide COVID-19 face mask mandates, emergency declarations, and stay-at-home orders. Total COVID-19 case counts and death counts (as of July 18, 2022) by state were also included. There were no significant correlations among state action on COVID-19 legislation and self-reported rates of depression in 2020. This could also be indicative of a flaw in the study design of evaluating these variables from a top-down approach. Although none of the other variables resulted in significant correlations, there were negative correlations associated with state action on COVID-19 face mask mandates, stay-at-home orders, total COVID-19 case counts, and total COVID-19 death counts which could be indicative of potential associations that need to be further explored in greater detail.

Table 7. *Self-reported rates of depression by state variability in regard to state-level COVID-19 response legislation.*

	Self-Reports of Depression in 2020
Mesosystem Level	
State Action on COVID-19 – Face Mask	
Pearson Correlation	-0.147
Significance (2-tailed)	0.309
State Action on COVID-19 – Emergency	
Pearson Correlation	0.078
Significance (2-tailed)	0.593
State Action on COVID-19 – Stay at Home Order	
Pearson Correlation	-0.042
Significance (2-tailed)	0.775
Total COVID-19 Case Counts (as of 07/18/22)	
Pearson Correlation	-0.129

Significance (2-tailed)	0.374
Total COVID-19 Death Counts (as of 07/18/22)	
Pearson Correlation	-0.148
Significance (2-tailed)	0.305

Objective IV: To construct an in-depth comparison of the best and worst ranked states, overall.

For this objective, a descriptive comparison matrix was created to explore the macrosystem and mesosystem state level characteristics for the best and worst rated states overall, to gain a more in-depth understanding of what factors may be contributing to mental illness. The variables that were examined at the macrosystem level include population estimates, healthcare expenditures, governor party, average household income, percent poverty, and unemployment rate. The variables that were examined at the mesosystem level the prevalence of AMI, unmet mental health needs, and Medicaid expansion legislation in 2019. These data include figures from prior to (2019) and after the onset of the pandemic (2020).

RQ3-a: What factors might be contributing to reports of mental illness and how do these vary by state prior to, and after the onset of the COVID-19 pandemic – further examining the best and worst ranked states, overall?

The expectations of this analysis are that there will be differences in regards to state characteristics (such as poverty and unemployment rates) and mental health outcomes (prevalence of AMI and unmet mental health needs) prior to, and after the onset of the COVID-19 pandemic. I also expect to see differences between the best and worst ranked states, overall.

To examine what factors might be contributing to reports of mental illness, two states were chosen for a more in-depth analysis of state characteristics prior to, and after the onset of the COVID-19 pandemic. The states that were chosen are Oregon and Hawaii because they had

consistently ranked as one of the worst states in regard to the prevalence of AMI and unmet health needs and one of the best states between 2019 and 2020, respectively. As Table 5 suggests, these two states provide a stark contrast as although they share similar political environments (democratic party) and socioeconomic variables, they have drastically different prevalence measures for AMI and unmet needs. In 2019, prior to the COVID-19 pandemic, Oregon had a larger population estimate (4,217,737) than Hawaii (1,415,872) and also had significantly higher rates of personal and hospital healthcare expenditures ($40,623 and $15,470 in comparison to $13,526 and $4,901, respectively). Oregon also had a lower average household income ($75,342) and higher unemployment rate (3.5%), but lower percent poverty (8.1%) than Hawaii. At the mesosystem level, Oregon had a significantly higher prevalence of mental illness and unmet needs (22.6% and 24.9%) when compared to Hawaii (15.6% and 15.8%). Although these percentages could be higher due to Oregon's larger population size, the state ranked worse than other states that had similar population estimates (e.g., Alabama, Louisiana, Kentucky, Oklahoma). This could possibly be attributed to not having enough mental resources available per capita, SDOH factors (i.e., lack of insurance, low income), geographic or environmental factors, or greater numbers of individuals living in rural areas versus urban. Both states adopted Medicaid expansion in 2019.

Table 8. *State characteristics prior to the COVID-19 pandemic based on 2019 estimates for Oregon and Hawaii*.

	Oregon	Hawaii
Macrosystem Level		
Population Estimate	4,217,737	1,415,872
Personal Healthcare Expenditures ($)	40,623	13,526
Hospital Healthcare Expenditures ($)	15,470	4,901
Governor Party	Democratic	Democratic

Average Household Income ($)	75,342	89,105
Percent Poverty (%)	8.1	8.4
Unemployment Rate (%)	3.5	2.7
Mesosystem Level		
Percent of Adults with Any Mental Illness (%)	22.6	15.6
Percent of Adults with AMI Reporting Unmet Need (%)	24.9	15.8
Medicaid Expansion Legislation (2019)	Adopted Medicaid Expansion	Adopted Medicaid Expansion

Table 9. *State characteristics and COVID-19 legislation after the onset of the COVID-19 pandemic based on 2020 estimates for Oregon and Hawaii*.

	Oregon	Hawaii
Macrosystem Level		
Population Estimate	4,241,544	1,451,911
Personal Healthcare Expenditures ($)	42,716	14,480
Hospital Healthcare Expenditures ($)	16,318	5,324
Governor Party	Democratic	Democratic
Average Household Income ($)	76,554	80,729
Percent Poverty (%)	9.4	10.9
Unemployment Rate (%)	7.5	14.8
Mesosystem Level		
Percent of Adults with Any Mental Illness (%)	23.6	16.3
Percent of Adults with AMI Reporting Unmet Need (%)	28.5	14.7
Medicaid Expansion Legislation (2019)	Adopted Medicaid Expansion	Adopted Medicaid Expansion
State Action on COVID-19 – Face Mask	No	Indoor Only
State Action on COVID-19 – Emergency	No	Yes
State Action on COVID-19 – Stay at Home Order	Yes	Yes
Total COVID-19 Case Counts (as of 07/18/22)	836,353	317,540
Total COVID-19 Death Counts (as of 07/18/22)	7,944	1,535
Microsystem Level		

Individual Self-Report Rates of Depression (%)	45.3	39.5

After the onset of the COVID-19 pandemic, as indicated in Table 9 (above), the population estimates of each of the states decreased slightly, while the healthcare expenditures (personal and hospital), percent poverty, and unemployment rates increased for both Oregon and Hawaii. Although Oregon's average household increased slightly between 2019 and 2020, Hawaii's average household income decreased by nearly $8,376. Hawaii's unemployment also increased by more than five-fold which could be attributed to the state's heavy reliance on tourism being impacted after the onset of the pandemic. At the mesosystem level, the percent of adults with AMI increased for both states whereas the percent of adults with AMI reporting unmet needs increased for Oregon (to 28.5%) but decreased for Hawaii (14.7%). In regard to state action on COVID-19 legislation, both states mandated a stay-at-home order during the pandemic, whereas Hawaii was the only one to instate face mask mandates and an emergency declaration. Oregon had higher rates of total COVID-19 cases and deaths in comparison to Hawaii, but this could be due to its larger population size.

4.2. Summary of Findings

Although there were no significant findings presented in this analysis some slight correlations among meso- and macrosystem level variables could be indicative of the impacts of the COVID-19 pandemic on economic and mental health outcomes. In 2019, Oregon and Idaho had high prevalence of mental illness and unmet mental health needs, while Texas and Hawaii had low prevalence. Economic characteristics at the macro-system level, like household income and healthcare spending, look to be associated with better mental health rankings among Texas and Hawaii. While some small connections between economic factors such as household income

and healthcare spending, and mental illness and unmet healthcare needs (meso-system) exist, the data does not reveal any significant changes related to the COVID-19 pandemic and legislation or differences between 2019 and 2020. However, some slight increases in certain indicators like mental illness prevalence, unmet mental health needs, household income, and poverty, may have been influenced by the pandemic. The increases in the prevalence of mental illness and unmet mental health needs could also be indicative of SDOH factors such as income, insurance coverage, access to care in the built environment (Office of Disease Prevention and Health Promotion, n.d.-b), that could have been impacted by the pandemic as well. I have provided a more detailed summary of results as well as possible policy implications and future recommendations in the next chapter (Chapter 5). It is also important to note that the sample size (n=50) is small, and one should not expect statistically significant differences. Further analyses should utilize some form of a cluster or discrimination function analysis that may uncover additional patterns or differences among states.

CHAPTER 5: DISCUSSION AND FUTURE RECOMMENDATIONS

5.1. Discussion

Impacts of the COVID-19 Pandemic on Mental Illness and Unmet Mental Health Needs

Mental illness and unmet mental health needs are significant public health problems in the U.S., and have been exacerbated even further after the onset of the COVID-19 pandemic (WHO, 2022; Cullen et al., 2020; World Health Organization; 2022; Sher, 2020). In a study conducted in 2021, nearly 50 percent of Americans surveyed reported experiencing anxiety or depression, and 10 percent of respondents reported unmet needs because of the COVID-19 pandemic (U.S. Department of Health and Human Services, 2023). Anxiety, depression, and substance use disorder have been on the rise since the beginning of the pandemic (USDHHS, 2023). It is also important to note that individuals with preexisting mental illness are more likely to die due to COVID-19 (USDHHS, 2023). These concerns are important to recognize because if left unaddressed, discrepancies among the social determinants of health (SDOH) for individuals will be further increased at the macro-, meso-, and microsystem levels, causing greater incongruencies among affordability and accessibility of mental health treatment and care (Coombs et al., 2021; Yoon et al., 2019; Unite for Sight, n.d.).

Although there were no significant findings presented in this analysis, some slight correlations among meso- and macrosystem level variables could be indicative of the impacts of the COVID-19 pandemic on economic and mental health outcomes. The states that present the most significant impacts from the pandemic related to the prevalence of any mental illness (AMI) are Idaho (3.41% increase from 2019 to 2020), Washington (2.09% increase), and Missouri (2.02% increase). Pandemic linked stressors such as illness, death, loss of income, and unemployment, as well as social isolation, disruptions to daily life, and uncertainty about the

future may contribute to the increased rates of mental illness (Clemente-Suárez et al., 2021). As the Stress Process Model suggests, individuals who experience numerous stressors may be at an increased risk of developing mental illness such as anxiety, depression, and post-traumatic stress disorder (Schneiderman et al., 2005; Clemente-Suárez et al., 2021). Although pre-pandemic data related to these specific conditions was not available from Mental Health America (MHA) at the time this database was created, the average rate of self-reported risk for depression among all states was 37.6 percent in 2020, with Alaska having the highest rates (71.2%) and Louisiana having the lowest (27.1%). Perhaps individuals in these states experienced greater stressors due to having more rural communities and less access to resources for stay-at-home orders or less opportunities to work remotely which perpetuated further job loss and stress. Geographic location could also be a potential consideration as Idaho and Washington are in the West and border one another, whereas Missouri is in the Midwest. The states that appear to be the least impacted by the pandemic regarding the prevalence of AMI are New Mexico (1.46% decrease from 2019 to 2020), Virginia (1.18% decrease), and Vermont (1.01% decrease). While the specific protective mechanisms are hard to predict at the macro- and meso levels the variability among states could be indicative of economic, geographic, or environmental factors in these states that could have helped them adapt better to the effects of the pandemic. For instance, these states could have been provided more COVID-19 relief resources or had more support services already established in local communities during the pandemic. Future studies should further explore these differences at the community and individual levels to better understand the factors that could be protective against the effects of the pandemic.

Similarly, there is great variability related to unmet mental health needs among states prior to and after the onset of the pandemic. The states that present the most significant impacts

from the pandemic on unmet mental health needs are Utah (10.3% increase from 2019 to 2020), Rhode Island (6.9% increase), and Nebraska (5.6%). Utah's significant increase in unmet mental health needs could be indicative of the state's response to the pandemic as well as their limited personal healthcare expenditures per capita. Although this state has one of the highest average household incomes and lowest poverty rates, it consistently ranks as one of the worst ranked states with the highest rates of AMI and unmet mental health needs. Nebraska is located in the Midwest, and contrary to Utah, the state allocates a substantial amount of funding to personal healthcare expenditures. Although they had a large increase in unmet mental health needs between 2019 and 2020, they are still ranked well in the top five states with the lowest prevalence rates of unmet mental health needs. Perhaps this suggests some mild associations between personal healthcare expenditure spending by state and unmet mental health needs. The states that appear to be the least impacted by the pandemic regarding unmet mental health needs are Minnesota (2.9% decrease from 2019 to 2020), Alabama (2.3% decrease), and North Carolina (2.3% decrease). Alabama is another state that spends a significant amount on personal healthcare expenditures but interestingly, has a rather low average household income and high poverty rate. Although Minnesota and North Carolina exist in different geographic regions of the U.S. (Midwest and South, respectively) they share a similar characteristic in regard to governor party (Democratic). Minnesota has a slightly higher personal average household income and lower percent poverty rate but spends less on personal healthcare expenditures than North Carolina. It appears personal healthcare expenditures by state may influence unmet mental health needs, but average household income and percent poverty do not have as much of an impact at the macrosystem level. Larger trends suggest that the increase in unmet mental health needs can likely be attributed to an increased need in mental health care due to the stressors of the

pandemic, but decreased access to care due to stay at home orders, restrictions on in-person appointments, and the overwhelmed healthcare system. These factors should be further explored at the community and individual levels to see if any associations exist. Additionally, future studies should consider how the landscape of mental health services and resources were altered by the pandemic as this may provide more insight into why exactly these needs changed over the course of the year.

Policy Implications

Policy implications at the macrosystem level are important to consider to provide context for why variability among states persists. Policymakers are actively trying to expand mental health funding and services at the federal, state, and local levels in response to the increase in mental illness and unmet mental health needs due to the COVID-19 pandemic. As President Biden noted in his 2022 Presidential Address, the national mental health crisis and the opioid epidemic are his top concerns (The White House, 2022). Understanding these policies is important in comprehending their potential impacts on mental health funding as well as where there might be opportunity for policy reform. The policies that will be further examined include federal and state level polices and initiatives (specifically Oregon and Hawaii) to provide more context about the political landscape at the national and state levels. Future studies should consider exploring these policies as potential factors that may be contributing to the prevalence of mental illness and unmet mental health needs (i.e., explore states that have implemented these policies versus those that did not).

Federal Level Policies and Initiatives

The U.S. federal government continues to prioritize working towards increasing access to mental health care and services for individuals – making it largely a bipartisan issue. Recent

policies have focused on expanding insurance coverage, addressing the opioid epidemic, and increasing funding for access to mental health services. A few important federal mental health policies to note are The Mental Health Parity and Addiction Equity Act (MHPAEA), The American Rescue Plan Act, and The National Suicide Hotline Designation Act. MHPAEA is a federal law that requires health insurance plans to provide equivalent benefits for mental health and substance use disorder treatment as they do medical and surgical benefits (Centers for Medicare and Medicaid Services, n.d.-b). The law was recently expanded in 2020 to cover more health plans (CMS, n.d.-b). MHPAEA is imperative to improving mental health outcomes among adults in the U.S. because it helps to even the playing field regarding mental health treatment costs and also helps to increase the accessibility and equitability of mental health care for all. Another policy that is important to recognize is the American Rescue Plan Act. This law was recently passed in 2021 and includes several provisions related to mental health, such as increasing funding for mental health and substance use disorder treatment in local communities and expanding access to telehealth services (Congressional Research Service, 2021). This policy is important to mental illness and unmet mental health needs as it will provide more resources and support to individuals with AMI and make care more accessible through telehealth services. This policy will also be beneficial to more geographically sparse states (i.e., the Midwest). It will be interesting to see how this policy will continue to help bridge the gap that persists among unmet mental health needs. Finally, the National Suicide Hotline Designation Act was passed in 2020, to increase access to crisis support and suicide prevention services. This initiative elected "9-8-8" as the national suicide prevention hotline number which makes it easier for individuals to seek help more efficiently (Congressional Research Service, 2020). All of these policies will aid

in the work of policymakers at the federal, state, and local levels to help improve mental health outcomes and unmet mental health needs among individuals with mental illness in the U.S.

State Level Policies and Initiatives

The state level legislation that will be spotlighted include policies and initiatives in Oregon and Hawaii. These states were chosen because they had consistently ranked as one of the worst states in regard to the prevalence of AMI and unmet health needs (Oregon) and one of the best states (Hawaii). It is important to consider the recent mental health policies for each of these as it may provide more context as to why there is so much variability regarding AMI and unmet health needs among these states. Oregon recently passed several mental health bills related to increasing Medicaid reimbursement rates and pay codes (HB 5202), providing more funding to community mental health programs to support mobile crisis intervention teams (HB 246), and working towards providing more culturally responsive mental health services for underserved communities (HB 2086) (Jones, 2021; Haas, 2022; Legislative Policy and Research Office, 2021). These bills aid in providing more funding and support for communities to deliver care to individuals with mental illness and unmet mental health needs. As the majority of the policies have been adopted in the last few years, it will be interesting to see how, or if, the mental health outcomes in Oregon continue to improve. As Hawaii has the best mental health rankings out of all fifty states, their recent mental health policies and initiatives are limited. SB 677 aims to increase access to affordable, quality, comprehensive care by providing advanced training to clinical psychologists so that they can prescribe psychotropic medication (LegiScan, 2023). The state also developed several mental health initiatives including a stigma reduction campaign known as “No Shame Get Help – It All Starts With a Conversation” and their Hawaii Cares Crisis Line. These programs not only help to reduce stigma related to seeking mental health

services, but also make mental health treatment and crisis services more accessible. Additionally, it makes sense that Oregon has a significantly larger number of bills in the House and Senate than Hawaii, as they have greater room for improving mental health outcomes and unmet mental health needs for their citizens.

5.2. Limitations & Strengths

This study is limited in a few ways. First, the study uses cross-sectional data sourced from multiple national databases that vary in regard to the time periods the data was collected, analyzed, and organized. Unfortunately, due to these limitations, there were discrepancies in available data and the years that were able to be analyzed in the study. Additionally, no data sources were available that collect data in real-time other than the Worldometer COVID-19 dashboard (Worldometer, n.d.). This limited the COVID-19 case and death counts data as it could only be added to the database at one point in time. There were also not any pre COVID-19 self-reported depression data or micro-, meso-, or macrosystem measures of stigma available. Moreover, only publicly available data sources were used which limited the scope of the variables that could be included in this study (i.e. lack of measures of stigma). Furthermore, some of the data sources do not collect data annually and had gaps in years of available data. It is also important for future studies to verify self-report data is consistent with other measures of AMI when conducting comparative analyses among these variables. The state level analysis revealed considerable variability, which is to be expected given the relatively small sample size (n=50); however, an analysis of trends over time may reveal consistent associations, or patterns, between the macro-, meso-, and microsystems. Moreover, longitudinal research is needed to uncover the longer-term effects of economic changes, legislation, and funding at the state level.

Another limitation is the study does not examine federal level legislation that could influence mental health outcomes.

Some of this study's strengths include its use of nationwide data sources with large sample sizes. Since it is a secondary analysis, it requires minimal financial resources. It also utilizes a multidisciplinary approach, combining public health and public policy, to provide a robust perspective about the mental health system, public health response approaches, and healthcare services in the U.S.

This research is critical because it will help future researchers and policymakers better understand the contributing factors that may influence unmet mental health needs among adults in the U.S. The White House Plan and other federal initiatives have only been recently passed, so there has not been ample time for implementation. Adding to the database in the next couple of years is a necessary next step, as well as adding in additional data on what states did with the new funding for mental health initiatives.

5.3. Future Recommendations

Research Study Recommendations

These findings are important to consider for many reasons. First, they provide context related to the impacts of the COVID-19 pandemic and the changes in prevalence of AMI and unmet mental health needs across all 50 states in the U.S. This study is the first of its kind to evaluate macro- and mesosystem level variables including state level indicators, recent legislation, and mental health outcomes, in the context of the COVID-19 pandemic. This information is important to future research studies, as the magnitude of the pandemic and long-term impacts continue to be unraveled. It is important for studies to further explore the specific factors that are influencing these outcomes at the macrosystem level, such as healthcare

expenditures, average household income, and percent poverty. It is also important for future studies to explore the influential factors that may be prevalent at the community and individual levels. Additionally, the development of stigma measures at micro-, meso-, and macrosystem levels are pivotal for understanding the impacts of stigma and discrimination in future research. Although this study indicated several possible associations between mental health outcomes and economic factors additional research needs to be conducted about exactly which of these factors is causing the most variability among states and how this continues to change over time. This study only looked at a piece of the picture, and further analyses should explore the findings with a nuanced, longitudinal perspective. This will help to inform future policies that can either provide more mental health funding and resources, or help mitigate the impacts of the state level factors that are causing adverse effects. Secondly, it provides the opportunity for future studies to explore additional factors that may be contributing to mental illness at the mesosystem and microsystem levels. This could include specific mental health policies related to communities (i.e., continued Medicaid expansion) or individual level factors (i.e., gender, race/ethnicity). Studies that prioritize exploring these levels of the Wholistic Framework of Mental Health (Scheid & Smith, 2021) will be pivotal in further understanding the findings from this study, as only minimal associations exist at the macrosystem level, suggesting that the larger influences could be occurring at the community and individual levels. Additionally, further state comparisons should be conducted to see what differences may exist between individual states at these levels. Finally, this study is significant for the field of public health as the database that was created serves as a valuable tool for researchers to add to or use in future studies, especially when evaluating measures at the mesosystem and macrosystem levels nationwide. To my knowledge, no other publicly available longitudinal databases are available that combine state-

level characteristics, mental health data, and COVID-19 response legislation. This database helps to improve the gaps among resources available containing state-level information over time. Additionally, the database provides value in the context of state measures and rankings, which might be beneficial to future studies as well. The findings of this study add value to the field of public health, by suggesting that mental illness (specifically, depression) is likely not as influenced by macrosystem level factors such as state-level characteristics as originally hypothesized, but instead might be more greatly influenced by mesosystem and microsystem or individual level factors. The mesosystem level factors that would be further expanded upon would include important indicators of stigma and intersectionality as well as community and local variability, such as rural and urban differences. Politically, we are seeing a growing political divide which can reflect differing attitudes about mental illness (stigma) as well as diversity.

Policy Recommendations

It is also important for policymakers to have a better understanding about what factors might be contributing to the prevalence of AMI and unmet health needs so that their policy recommendations can be more informed. It may be beneficial for researchers to share findings from future research studies to local community-based organizations or advocacy groups so that the community (and hopefully local politicians) can stay more informed about what factors persist in the community and the solutions that may exist or need to be created to help mitigate their effects on mental health outcomes. It is also important for future policies to consider the impacts of the social determinants of health (SDOH) as this study provides confirmation that some of these factors, such as economic stability, are important in understanding the context of the individual and their risk for mental illness (Office of Disease Prevention and Health

Promotion, n.d.-b; Coombs et al., 2021; Yoon et al., 2019; Unite for Sight, n.d.). By addressing the SDOH, public health initiatives and policies can improve health outcomes among the U.S. population. Noteworthy is that in Scheid and Smith's (2021) examination of state level mental health legislation there were only three bills passed that focused on stigma reduction (out of 185 bills passed in 2013), which indicates the importance of expanding this area of research. Moreover, advocating for these mental health policies is also important for many reasons including raising awareness, reducing stigma, increasing access to resources, and enacting policy change at the community, state, and federal levels. The findings from this study as well as the policy implications also position the opportunity for future translational research that can be applied when communicating these research findings and community needs to policymakers.

References

Agency for Healthcare Research and Quality. (2016). *2015 National Healthcare Quality and Disparities Report.* Retrieved from https://www.ahrq.gov/sites/default/files/wysiwyg/research/findings/nhqrdr/chartbooks/prsoncentered/qdr2015-chartbook-personcenteredcare.pdf

American Psychiatric Association. (n.d.). "*Mental health disparities: Diverse populations"*. Retrieved from https://www.psychiatry.org/psychiatrists/cultural-competency/education/mental-health-facts

American Psychiatric Association. (2020). "*Stigma and discrimination"*. Retrieved from https://www.psychiatry.org/patients-families/stigma-and-discrimination

American Psychological Association. (n.d.). "*Disparities in mental health status and mental health care"*. American Psychological Association. Retrieved from https://www.apa.org/advocacy/health-disparities/health-care-reform

Andraska, E. A., Alabi, O., Dorsey, C., Erben, Y., Velazquez, G., Franco-Mesa, C., & Sachdev, U. (2021). Health care disparities during the COVID-19 pandemic. *Seminars in Vascular Surgery*, 34(3), 82–88. https://doi.org/10.1053/j.semvascsurg.2021.08.002

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.

Centers for Disease Control and Prevention. (2007). "*The socio-ecological model: A framework for prevention"*. Retrieved from https://www.atsdr.cdc.gov/communityengagement/pce_models.html

Centers for Medicare and Medicaid Services. (n.d.-a). "*About us*". Retrieved from https://www.cms.gov/About-CMS/About-CMS

Centers for Medicare and Medicaid Services. (n.d.-b). "*The mental health parity and addiction equity act (MHPAEA)*". Retrieved from https://www.cms.gov/CCIIO/Programs-and-Initiatives/Other-Insurance-Protections/mhpaea_factsheet

Christidis, P., Linn, L., & Stamm, K. (2018, April). "*An unmet need for mental health services*". *Monitor on Psychology*. Retrieved from https://www.apa.org/monitor/2018/04/datapoint

Clemente-Suárez, V. J., Martínez-González, M. B., Benitez-Agudelo, J. C., Navarro-Jiménez, E., Beltran-Velasco, A. I., Ruisoto, P., Diaz Arroyo, E., Laborde-Cárdenas, C. C., & Tornero-Aguilera, J. F. (2021). The impact of the COVID-19 pandemic on mental disorders. A critical review. *International Journal of Environmental Research and Public Health*, 18(19), 10041. https://doi.org/10.3390/ijerph181910041

Congressional Research Service. (2021). "*H.R.1319 - American Rescue Plan Act of 2021"*. Retrieved from https://www.congress.gov/bill/117th-congress/house-bill/1319

Congressional Research Service. (2020) "*S.2661 - 116th congress: National Suicide hotline ...*". Retrieved from https://www.congress.gov/bill/116th-congress/senate-bill/2661

Coombs, N. C., Meriwether, W. E., Caringi, J., & Newcomer, S. R. (2021). Barriers to healthcare access among U.S. adults with mental health challenges: A population-based study. *SSM -Population Health*, *15*, 100847. https://doi.org/10.1016/j.ssmph.2021.100847

Cullen, W., Gulati, G., & Kelly, B. D. (2020). Mental health in the COVID-19 pandemic. *QJM: Monthly Journal of the Association of Physicians*, *113*(5), 311–312. https://doi.org/10.1093/qjmed/hcaa110

Cummings, J. R., Lucas, S. M., & Druss, B. G. (2013). Addressing public stigma and disparities among persons with mental illness: The role of federal policy. *American Journal of Public Health*, *103*(5), 781–785. https://doi.org/10.2105/AJPH.2013.301224

Dailey, S. F., Parker, M. M., & Campbell, A. (2022). Social connectedness, mindfulness, and coping as protective factors during the COVID-19 pandemic. *Journal of Counseling and Development,* 101(1), 114–126. https://doi.org/10.1002/jcad.12450

Federal Reserve Economic Data. (n.d.). "*What is Fred? Getting to know FRED"*. Retrieved from https://fredhelp.stlouisfed.org/fred/about/about-fred/what-is-fred/

Fofana, N. K., Latif, F., Sarfraz, S., Bilal, Bashir, M. F., & Komal, B. (2020). Fear and agony of the pandemic leading to stress and mental illness: An emerging crisis in the novel coronavirus (COVID-19) outbreak. *Psychiatry Research*, *291*, 113230. https://doi.org/10.1016/j.psychres.2020.113230

Haas, E. (2022, December 13). "*'This is a really big deal:' Mental health access may improve in Oregon with new house bill*". Retrieved from https://www.koin.com/news/oregon/this-is-a-really-big-deal-mental-health-access-may-improve-in-oregon-with-new-house-bill/

Hatzenbuehler, M. L., & Link, B. G. (2014). Introduction to the special issue on structural stigma and health. *Social Science & Medicine (1982)*, *103*, 1–6. https://doi.org/10.1016/j.socscimed.2013.12.017

Homan, P., Brown, T. H., & King, B. (2021). Structural intersectionality as a new direction for health disparities research. *Journal of Health and Social Behavior*, *62*(3), 350–370. https://doi.org/10.1177/00221465211032947

Jackson-Best, F., & Edwards, N. (2018). Stigma and intersectionality: A systematic review of systematic reviews across HIV/AIDS, mental illness, and physical disability. *BMC Public Health*, 18(1), 919. https://doi.org/10.1186/s12889-018-5861-3

Jang, Y., Yoon, H., Park, N. S., Rhee, M. K., & Chiriboga, D. A. (2019). Mental health service use and perceived unmet needs for mental health care in Asian Americans. *Community Mental Health Journal*, *55*(2), 241–248. https://doi.org/10.1007/s10597-018-0348-3

Jenkins R. (2003). Supporting governments to adopt mental health policies. *World Psychiatry: Official journal of the World Psychiatric Association (WPA)*, *2*(1), 14–19

Ji, X., Marchak, J. G., Mertens, A. C., Curseen, K. A., Zarrabi, A. J., & Cummings, J. R. (2021). National estimates of mental health service use and unmet needs among adult cancer survivors. *Cancer*, *127*(22), 4296–4305. https://doi.org/10.1002/cncr.33827

Jones, P. (2021, June 30). "*Oregon legislature passed many new investments in behavioral health state of reform*". Retrieved from https://stateofreform.com/featured/2021/06/oregon-legislature-behavioral-health/

Kaiser Family Foundation. (2020). "*More about KFF*". Retrieved from https://www.kff.org/more-about-the-kaiser-family-foundation/

Kaiser Family Foundation. (2021). "*State action to mitigate the spread of COVID-19*". Retrieved from https://www.kff.org/other/state-indicator/state-actions-to-mitigate-the-spread-of-covid-19/?currentTimeframe=0&selectedDistributions=statewide-face-mask-requirement--emergency-declaration--stay-at-home-order&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

Knifton, L., & Inglis, G. (2020). Poverty and mental health: Policy, practice and research implications. *BJPsych bulletin*, *44*(5), 193–196. https://doi.org/10.1192/bjb.2020.78

Krans, B. (2018, October 20). Stigma still a major hurdle in getting people the mental health care they need. Healthline. Retrieved from https://www.healthline.com/health-news/mental-health-treatment-hindered-by-stigma-030214

LegiScan (2023). *"Hawaii SB677: 2023: Regular session"*. Retrieved from https://legiscan.com/HI/text/SB677/2023

Legislative Policy and Research Office. (2021). "*Legislative summary brief behavioral health*". Retrieved from https://www.oregonlegislature.gov/lpro/SMLByChapter/2021%20-%20Behavioral%20Health%20-%20Legislative%20Summary%20Brief.pdf

Levin, B. L., Hennessy, K. D., & Petrila, J. (Eds.). (2010). *Mental Health Services: A Public Health Perspective* (Third). Oxford University Press.

Li, F., Luo, S., Mu, W., Li, Y., Ye, L., Zheng, X., Xu, B., Ding, Y., Ling, P., Zhou, M., & Chen, X. (2021). Effects of sources of social support and resilience on the mental health of different age groups during the COVID-19 pandemic. *BMC Psychiatry*, 21(1), 16. https://doi.org/10.1186/s12888-020-03012-1

Lu, X., & Lin, Z. (2021). COVID-19, economic impact, mental health, and coping behaviors: A conceptual framework and future research directions. *Frontiers in Psychology*, 12, 759974. https://doi.org/10.3389/fpsyg.2021.759974

Massie, M. (2020). "*A facilitators guide intersectional approaches to ... - wellbeing"*. Retrieved from https://wellbeing.ubc.ca/sites/wellbeing.ubc.ca/files/u9/Facilitator%20Guide%20-%20Intersectionality%20and%20Mental%20Health.pdf

Mental Health America. (2022a). "*The state of mental health in America"*. Retrieved from https://mhanational.org/sites/default/files/2022%20State%20of%20Mental%20Health%20in%20America.pdf

Mental Health America. (2021). "*The state of mental health in America"*. Retrieved fromhttps://mhanational.org/sites/default/files/2021%20State%20of%20Mental%20Health%20in%20America_0.pdf

Mental Health America. (2022b). "*Glossary 2022"*. Retrieved from https://mhanational.org/glossary-2022

Mental Health America. (n.d.). "*About us"*. Retrieved from https://www.mhanational.org/about#:~:text=as%20the%20goal.,About%20Mental%20Health%20America,overall%20mental%20health%20of%20all

Mojtabai, R., Olfson, M., Sampson, N. A., Jin, R., Druss, B., Wang, P. S., Wells, K. B., Pincus, H. A., & Kessler, R. C. (2011). Barriers to mental health treatment: Results from the National Comorbidity Survey Replication. *Psychological Medicine*, *41*(8), 1751–1761. https://doi.org/10.1017/S0033291710002291

Montez, J. K., Hayward, M. D., & Zajacova, A. (2021). Trends in U.S. population health: The central role of policies, politics, and profits. *Journal of Health and Social Behavior*, *62*(3), 286–301. https://doi.org/10.1177/00221465211015411

Morales, D. A., Barksdale, C. L., & Beckel-Mitchener, A. C. (2020). A call to action to address rural mental health disparities. *Journal of Clinical and Translational Science*, 4(5), 463–467. https://doi.org/10.1017/cts.2020.42

National Alliance on Mental Illness. (2021). "*Mental health by the numbers"*. Retrieved from https://www.nami.org/mhstats

National Alliance on Mental Illness. (2020). *NAMI 2019 State Legislation Report*. Retrieved from https://nami.org/Support-Education/Publications-Reports

National Alliance on Mental Illness. (n.d.-a). "*About NAMI*". Retrieved from https://www.nami.org/About-NAMI

National Alliance on Mental Illness. (n.d.-b). "*The doctor is out"*. Retrieved from https://www.nami.org/Support-Education/Publications-Reports/Public-Policy-Reports/The-Doctor-is-Out

National Conference of State Legislatures. "*About us"*. Resources for State Legislators and Legislatures | About NCSL. (n.d.). Retrieved October 25, 2022, from https://www.ncsl.org/aboutus.aspx

National Center for Immunization and Respiratory Diseases. (2020, July 24). "*Health equity considerations and racial and ethnic minority groups*". Retrieved from https://stacks.cdc.gov/view/cdc/91049

New American Economy. (2017). "*The silent shortage*". Retrieved from http://research.newamericaneconomy.org/wp-content/uploads/2017/10/NAE_PsychiatristShortage_V6-1.pdf

O'Brien, A., Fahmy, R., & Singh, S. P. (2009). Disengagement from mental health services. A literature review. *Social Psychiatry and Psychiatric Epidemiology*, *44*(7), 558–568. https://doi.org/10.1007/s00127-008-0476-0

Office of Disease Prevention and Health Promotion. (n.d.-a). "*Mental health"*. Mental Health | Healthy People 2020. Retrieved from https://www.healthypeople.gov/2020/leading-health-indicators/2020-lhi-topics/Mental-Health

Office of Disease Prevention and Health Promotion. (n.d.-b). "*Social determinants of health - healthy people 2030*". Retrieved from https://health.gov/healthypeople/priority-areas/social-determinants-health

Patel, V., Burns, J. K., Dhingra, M., Tarver, L., Kohrt, B. A., & Lund, C. (2018). Income inequality and depression: A systematic review and meta-analysis of the association and a scoping review of mechanisms. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, *17*(1), 76–89. https://doi.org/10.1002/wps.20492

Pearlin, L. I., Lieberman, M. A., Menaghan, E. G., & Mullan, J. T. (1981). The stress process. *Journal of Health and Social Behavior*, 22(4), 337–356.

Pfefferbaum, B., & North, C. S. (2020). Mental health and the Covid-19 Pandemic. *The New England Journal of Medicine*, *383*(6), 510–512. https://doi.org/10.1056/NEJMp2008017

Pickett, K. E., James, O. W., & Wilkinson, R. G. (2006). Income inequality and the prevalence of mental illness: a preliminary international analysis. *Journal of Epidemiology and Community Health*, *60*(7), 646–647. https://doi.org/10.1136/jech.2006.046631

Rens, E., Dom, G., Remmen, R., Michielsen, J., & Van den Broeck, K. (2020). Unmet mental health needs in the general population: Perspectives of Belgian health and social care

professionals. *International Journal for Equity in Health*, *19*(1), 169. https://doi.org/10.1186/s12939-020-01287-0

Sadowska, K. (n.d.). The socioeconomic and racial disparities in mental health care. Retrieved from https://ojs.stanford.edu/ojs/index.php/sjph/article/download/1202/1125/4818

Scheid, T.L. (2021). "*Mental health*". Medical Sociology, edited by William C. Cockerham, Wiley Blackwell, 410.

Scheid, T. L. (2015). *Comprehensive care for HIV/AIDS: Community-based strategies*. Routledge/Taylor & Francis Group.

Scheid, T. L., & Smith, S. M. (2021). *Ties that enable: Community solidarity for people living with serious mental health problems*. Rutgers University Press.

Schneiderman, N., Ironson, G., & Siegel, S. D. (2005). Stress and health: Psychological, behavioral, and biological determinants. *Annual Review of Clinical Psychology*, *1*, 607–628. https://doi.org/10.1146/annurev.clinpsy.1.102803.144141

Shangani, S., Gamarel, K. E., Ogunbajo, A., Cai, J., & Operario, D. (2020). Intersectional minority stress disparities among sexual minority adults in the USA: The role of race/ethnicity and socioeconomic status. *Culture, Health & Sexuality*, 22(4), 398–412. https://doi.org/10.1080/13691058.2019.1604994

Sher L. (2020). The impact of the COVID-19 pandemic on suicide rates. *QJM: Monthly Journal of the Association of Physicians*, *113*(10), 707–712. https://doi.org/10.1093/qjmed/hcaa202

Substance Abuse and Mental Health Services Administration. (2021). *Key substance use and mental health indicators in the United States: Results from the 2020 National Survey on Drug Use and Health (HHS Publication No. PEP21-07-01-003, NSDUH Series H-56*). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/

Substance Abuse and Mental Health Data Archive. (2019) *National Survey on Drug Use and Health (NSDUH) population data*. National Survey on Drug Use and Health 2019 (NSDUH-2019-DS0001) | SAMHDA. Retrieved from https://www.datafiles.samhsa.gov/dataset/national-survey-drug-use-and-health-2019-nsduh-2019-ds0001

SMI Adviser. (2021, May 10). "*Serious mental illness"*. Retrieved from https://smiadviser.org/about/serious-mental-illness

Stangl, A. L., Earnshaw, V. A., Logie, C. H., van Brakel, W., C Simbayi, L., Barré, I., & Dovidio, J. F. (2019). The health stigma and discrimination framework: A global,

crosscutting framework to inform research, intervention development, and policy on health-related stigmas. *BMC Medicine*, 17(1), 31. https://doi.org/10.1186/s12916-019-1271-3

The Lancet. (2016). The health crisis of mental health stigma. *The Lancet (British Edition)*, *387*(10023), 1027–1027. https://doi.org/10.1016/S0140-6736(16)00687-5

The White House. (2022a, March 1). "*Fact sheet: President Biden to announce strategy to address our national mental health crisis, as part of unity agenda in his first state of the union*". Retrieved from https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/01/fact-sheet-president-biden-to-announce-strategy-to-address-our-national-mental-health-crisis-as-part-of-unity-agenda-in-his-first-state-of-the-union/

The White House. (2022b, June 17). "*Reducing the economic burden of unmet mental health needs*". Retrieved from https://www.whitehouse.gov/cea/written-materials/2022/05/31/reducing-the-economic-burden-of-unmet-mental-health-needs/

Thoits, P. A. (2010). Stress and health: Major findings and policy implications. *Journal of Health and Social Behavior*, 51(1_suppl), S41–S53. https://doi.org/10.1177/0022146510383499

Unite for Sight. (n.d.). "*Barriers to mental health care"*. Retrieved from https://www.uniteforsight.org/mental-health/module6#:~:text=(1)%20Common%20barriers%20to%20mental,about%20mental%20illness%2C%20and%20stigma

U.S. Census Bureau (2022). "*What we do"*. Retrieved from https://www.census.gov/about/what.html

U.S. Census Bureau (2020). "*State population totals and components of change"*. Retrieved from https://www.census.gov/data/datasets/time-series/demo/popest/2020s-state-total.html

U.S. Department of Health and Human Services. (2023). "*Covid-19 mental health information and resources".* National Institutes of Health. Retrieved from https://covid19.nih.gov/covid-19-topics/mental-health#:~:text=Both%20SARS%2DCoV%2D2%20and,needs%20were%20not%20being%20met

U.S. Department of Health and Human Services. (2022). "*Mental illness"*. National Institute of Mental Health. Retrieved from https://www.nimh.nih.gov/health/statistics/mental-illness

U.S. Department of Veteran Affairs. (n.d.). "*Serious mental illness - veterans affairs"*. Retrieved from https://www.va.gov/PREVENTS/docs/PRE013_FactSheets_SeriousMentalillness_508.pdf

U.S. National Library of Medicine. (2022, March 15). "*Mental disorders"*. MedlinePlus. Retrieved from https://medlineplus.gov/mentaldisorders.html

Vasquez Reyes, M. (2020). The Disproportional Impact of COVID-19 on African Americans. *Health and Human Rights*, 22(2), 299–307.

Venkataramani, A. S., O'Brien, R., Whitehorn, G. L., & Tsai, A. C. (2020). Economic influences on population health in the United States: Toward policymaking driven by data and evidence. *PLoS medicine*, *17*(9), e1003319. https://doi.org/10.1371/journal.pmed.1003319

Walker, E. R., Cummings, J. R., Hockenberry, J. M., & Druss, B. G. (2015). Insurance status, use of mental health services, and unmet need for mental health care in the United States. *Psychiatric Services (Washington, D.C.)*, *66*(6), 578–584. https://doi.org/10.1176/appi.ps.201400248

World Health Organization. (2022). "*Covid-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide"*. World Health Organization. Retrieved from https://www.who.int/news/item/02-03-2022-covid-19-pandemic-triggers-25-increase-in-prevalence-of-anxiety-and-depression-worldwide

Worldometer. (n.d.). "*Worldometer COVID-19 data"*. Worldometer. Retrieved October 26, 2022, from https://www.worldometers.info/coronavirus/about/#about

Yang, L. H., Wong, L. Y., Grivel, M. M., & Hasin, D. S. (2017). Stigma and substance use disorders: an international phenomenon. *Current Opinion in Psychiatry*, *30*(5), 378–388. https://doi.org/10.1097/YCO.0000000000000351

Yoon, Y. S., Jung, B., Kim, D., & Ha, I. H. (2019). Factors underlying unmet medical needs: A cross-sectional study. *International Journal of Environmental Research and Public Health*, *16*(13), 2391. https://doi.org/10.3390/ijerph16132391

Appendix A

Researcher Statement

I am a 28-year-old, White, female, in my fourth year of my doctoral program. My experiences with our health care system, my family and friends' health, and my involvement in research, have all helped shape my assumptions about public health, and my goal of achieving my PhD in Public Health. During my adolescent years, my father was diagnosed with bipolar disorder, depression, and alcoholism. This was my first exposure to mental health and substance use disorders, and the effects they can have on a person and their family. In my later years, I encountered a friend who had been overprescribed Roxicodone during a simple medical procedure, which later manifested itself into a strong dependency on heroin. This was the first time I had ever been around someone with an addiction so extreme. During this time period, I was finishing my Master of Public Health degree. My friend asked me what I intended to do upon graduation. I wasn't exactly sure how to answer the question at the time, I simply knew I wanted to help others. His last words to me before I departed were "Alex, I want to go back to school so bad, but I can't because of the drugs," and from that point forward, I felt a calling to a greater sense of purpose for my degree and future research endeavors.

Throughout these experiences, I have learned that many friends and family members often give up on those suffering from mental health and substance use disorders, due to the stigma associated with mental disorders and addiction. I have seen first-hand the fragility of our healthcare system numerous times, and the critical need to increase accessibility to quality, affordable mental health care. My life encounters thus far, have been the premise for my current research interests related to mental health policy: exploring mental health conditions and substance use disorders as comorbidities, and destigmatizing mental health conditions and substance use. I believe that we need to eliminate mental health and substance use stigma and

increase access to quality care, so that we can save lives like my father's, my friend, and all of the other people in this world that are worth saving.

Appendix B

Tables

Table 4. *State rankings by percent of AMI and percent of unmet needs in 2019 (pre-COVID-19 pandemic)*.

Rank	State	Percent of AMI in 2019	Rank	State	Percent of Unmet Needs in 2019
1	OR	22.6	**1**	NV	26.2
2	UT	22.3	**2**	NH	25.1
3	KY	22.1	**3**	OR	24.9
4	ID	21.6	**4**	ID	24.7
5	AR	21.0	**5**	IN	24.5
6	WV	20.9	**6**	WA	24.3
7	VT	20.9	**7**	MO	24.1
8	WA	20.7	**8**	NC	24.1
9	MT	20.6	**9**	VA	23.6
10	CO	20.1	**10**	AR	22.7
11	AK	20.0	**11**	MS	22.6
12	VA	20.0	**12**	MN	22.3
13	IN	20.0	**13**	WV	21.9
14	OH	19.7	**14**	CO	21.8
15	TN	19.6	**15**	MD	21.8
16	WY	19.5	**16**	NM	21.6
17	NH	19.4	**17**	IL	21.5
18	MA	19.3	**18**	PA	21.5
19	RI	19.2	**19**	AZ	21.3
20	NM	19.2	**20**	SC	21.3
21	NC	19.0	**21**	WY	21.2
22	OK	18.9	**22**	KS	21
23	PA	18.8	**23**	GA	20.9
24	WI	18.5	**24**	UT	20.9
25	AL	18.5	**25**	CT	20.8
26	NE	18.4	**26**	DE	20.8
27	NV	18.3	**27**	MT	20.7
28	MN	18.2	**28**	TN	20.5
29	KS	18.2	**29**	OH	20.2
30	SC	18.1	**30**	SD	20.1
31	MO	18.0	**31**	KY	20
32	CT	18.0	**32**	CA	19.9
33	SD	17.8	**33**	NY	19.9
34	GA	17.7	**34**	OK	19.8
35	IA	17.7	**35**	MI	19.7
36	DE	17.7	**36**	NJ	19.7
37	ME	17.6	**37**	LA	19.6

38	NY	17.5	**38**	IA	19.2
39	AZ	17.5	**39**	MA	18.8
40	MZ	17.5	**40**	ND	18.8
41	MI	17.3	**41**	VT	18.8
42	LA	17.3	**42**	FL	18.5
43	FL	17.3	**43**	AK	18.3
44	CA	17.2	**44**	WI	18.1
45	ND	17.1	**45**	RI	17.4
46	MD	16.6	**46**	ME	17.3
47	TX	16.0	**47**	NE	17
48	IL	15.7	**48**	TX	16.7
49	HI	15.6	**49**	AL	16.6
50	NJ	15.5	**50**	HI	15.8

Table 5. *State rankings by percent of AMI and percent of unmet needs in 2020 (after onset of COVID-19 pandemic)*.

Rank	State	Percent of AMI in 2020	Rank	State	Percent of Unmet Needs in 2020
1	ID	25.0	**1**	UT	31.2
2	OR	23.6	**2**	NH	28.8
3	UT	23.5	**3**	NV	28.6
4	WV	22.9	**4**	OR	28.5
5	WA	22.8	**5**	VA	28.3
6	KY	22.3	**6**	KS	25.9
7	IN	21.0	**7**	IN	25.2
8	AR	20.7	**8**	AR	25
9	MA	20.6	**9**	MO	25
10	AK	20.3	**10**	SC	24.8
11	WY	20.3	**11**	PA	24.7
12	MO	20.1	**12**	WA	24.5
13	OK	20.0	**13**	RI	24.3
14	AL	20.0	**14**	NM	23.8
15	CO	19.9	**15**	MO	23.3
16	OH	19.9	**16**	CT	22.9
17	VT	19.8	**17**	KY	22.9
18	MT	19.8	**18**	NJ	22.9
19	KS	19.7	**19**	MD	22.6
20	RI	19.6	**20**	NE	22.6
21	TN	19.2	**21**	GA	22.5
22	NH	19.2	**22**	OK	22.4
23	LA	19.1	**23**	MA	22.3
24	MS	19.0	**24**	CO	22.2
25	IA	19.0	**25**	AK	22
26	ME	19.0	**26**	FL	22

27	NV	18.9	**27**	MI	22
28	VA	18.8	**28**	TN	22
29	DE	18.7	**29**	WI	22
30	SC	18.6	**30**	CA	21.9
31	WI	18.5	**31**	MS	21.9
32	MI	18.3	**32**	DE	21.8
33	ND	18.3	**33**	IL	21.8
34	MN	18.2	**34**	NC	21.8
35	CA	18.2	**35**	ID	21.7
36	CT	18.2	**36**	SD	21.7
37	GA	18.1	**37**	AZ	21.3
38	AZ	18.0	**38**	ND	21.2
39	NC	18.0	**39**	VT	20.7
40	PA	18.0	**40**	OH	20.4
41	NE	17.9	**41**	WV	20.4
42	NM	17.7	**42**	LA	20.2
43	SD	17.7	**43**	NY	20.1
44	NY	17.6	**44**	ME	19.7
45	FL	17.5	**45**	MN	19.4
46	MD	16.9	**46**	TX	19.2
47	IL	16.8	**47**	WY	19.2
48	TX	16.3	**48**	IA	18.2
49	HI	16.3	**49**	HI	14.7
50	NJ	16.2	**50**	AL	14.3