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## ABSTRACT

Mental Health, Health Coverage and Perceived Barriers to Care among LGBTQ+ Southerners

By

Andre M. Vasi

April 8<sup>th</sup>, 2021

**Background:** Research has found that those who are LGBTQ+ face disproportionate mental health outcomes with transgender and gender diverse (TGD) individuals having even greater mental health disparities than the general population and cisgender LGB+ individuals alike. Cross-sectional and surveillance studies have also found that LGBTQ+ and TGD individuals disproportionately have health access-related disparities in terms of healthcare coverage and perceived barriers to care than the general population. There is indication that LGBTQ+ individuals in the U.S. South have greater and unique health needs due to a widening health coverage gap relative to other regions of the U.S. **Aim:** Using 2017 LGBT Institute Southern Survey data, this study examines the relationships and disparities in mental health among LGBTQ+ individuals and across sexual and gender identity groups with healthcare coverage and perceived barriers to care to address multiple research gaps in LGBTQ+ and trans health research. **Methods:** A chi-square analysis was conducted to determine associations and group differences in healthcare coverage with psychological distress. Several One-way ANOVA tests were performed to assess the mental health disparities between sexual, gender and racial/ethnic groups via the mean psychological distress scores. Lastly, multivariate linear regression models were used to investigate the relationships healthcare coverage, perceived barriers to care, and individual LGBTQ+ identities have with psychological distress, after inputting sets of socio-demographic variables and interaction terms into each model. **Results:** There were disparities in healthcare coverage and mean psychological distress scores between LGBTQ+ groups, with higher uninsured rates and mean distress for respondents identifying as bisexual or other and among those identifying as TGD. In the linear regression, healthcare coverage ( $p < 0.0001$ ) and perceived barriers to care ( $p < 0.0001$ ) were significantly associated with psychological distress, even after all socio-demographic variables were controlled. Trans women ( $\beta = 1.44$ ,  $p < 0.01$ ) and gender diverse individuals ( $\beta = 1.05$ ,  $p < 0.05$ ) compared to cis men, and bisexuals ( $\beta = 0.93$ ,  $p < 0.01$ ) compared to gay men have higher distress. **Conclusions:** Mental health and health access disparities within LGBTQ+ sub-groups exist, which future studies should further examine utilizing inclusive, robust study designs. Public health policies and interventions which promote cultural responsiveness would be beneficial in reducing health access disparities among LGBTQ+ Southerners associated with poorer mental health statuses.

**Key words:** LGBT, LGBTQ, Transgender, Gender Diverse, BIPOC, Gender, Sexual Orientation, Health Disparities, Mental Health, Healthcare, Health Access, Perceived Barriers to Care, Health Coverage, U.S. South

MENTAL HEALTH, HEALTH COVERAGE AND PERCEIVED BARRIERS TO CARE AMONG LGBTQ+ SOUTHERNERS

by

Andre M. Vasi

B.A., Agnes Scott College

A Thesis Submitted to the Graduate Faculty  
of Georgia State University in Partial Fulfillment  
of the  
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MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA  
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APPROVAL PAGE

MENTAL HEALTH, HEALTH COVERAGE AND PERCEIVED BARRIERS TO CARE  
AMONG LGBTQ+ SOUTHERNERS

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04/08/2021

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## Author's Statement Page

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Andre M. Vasi  
Signature of Author

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## Chapter 1: Introduction

Healthy People 2030, led by the Office of Disease Prevention and Health Promotion at the U.S. Department of Health and Human Services (HHS), has set an overarching goal of improving the health, safety, and well-being of lesbian, gay, transgender, or queer (LGBTQ+) Individuals (HHS, 2021). As national and regional surveillance have become more inclusive of sexual orientation and gender identity in the 21<sup>st</sup> century, health disparities among sexual and gender minority groups have gained more prominence, which has garnered further imperative to understand LGBTQ+ health needs. Compared to the general population, those who identify as LGBTQ+ experience higher levels of mental health inequities and disparities, with transgender and gender diverse individuals experiencing the most disproportionate poorer mental health outcomes within the LGBTQ+ umbrella (Su et al., 2016; McCabe & Kinney, 2019). Research shows that while the LGB community experiences a suicide attempt rate of two to three times that of the general population, the transgender community experiences suicide attempts at nine times the rate (McCabe & Kinney, 2019). Through a Minority Stress Model and intersectionality theoretical lens, it is understood that with each dimension of marginalized identities one has (i.e. being transgender and queer, bisexual, and Black vs. cisgender, bisexual and White) brings additional layers of oppression, contributing to greater psychological distress and disparities in mental health disparities within the LGBTQ+ umbrella.

Perceived barriers to healthcare access have a significant impact on mental health for LGBTQ+ individuals (McCabe & Kinney, 2019). Health insurance coverage disparities exist between the LGBTQ+ community and the general population (17% vs. 13%) due to employment disparities (Gates, 2014; McCabe & Kinney, 2019). National and state healthcare policies also play a huge role in coverage disparities, especially in the South where health policy endeavors to

expand access to coverage, such as in Medicaid expansion, face numerous obstacles and uphill battles (Gates, 2014; McCabe & Kinney, 2019). For those who are transgender or gender diverse, healthcare coverage is often essential in accessing gender-affirming healthcare that otherwise would not be affordable out-of-pocket. As a result, transgender and gender diverse individuals carry additional mental health burdens within the LGBTQ+ umbrella due to experiencing greater challenges in access to often—though not always—necessary care and treatments vital to their mental health and personhood (McCabe & Kinney, 2019).

LGBTQ+-related research is already an established field with plentiful of research gaps, with literature exploring of interaction of mental health, health coverage and perceived barriers to care among LGBTQ+ communities having even more dearth. Additionally, research that examines LGBTQ+ health issues among those who live in the South is greatly needed. This thesis, in its primary purpose, attempts to fill in some of those gaps and to better understand these health disparities pertaining to mental health and healthcare coverage and perceived barriers to care among LGBTQ+ individuals and transgender and diverse individuals here in the South. This research will help to better understand the issues that impact sexual and gender minorities, the disproportionate disparities that may exist within the LGBTQ+ umbrella, and directions future research and healthcare systems overall can take to reduce health disparities.

The purpose of this descriptive, secondary data analysis study is to utilize survey data from the 2017 LGBT Institute Southern Survey, which was borne out of a partnership with the LGBT Institute at the National Center for Civil and Human Rights and Georgia State University. The data were collected using an untraceable, online anonymous survey of self-identified LGBTQ+ adults living in 14 U.S. states, including: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas,

Virginia, and West Virginia. The survey instrument was developed in close collaboration with LGBTQ+ activists and organizations with the aim of collecting critical data on educational and employment status, health and access to healthcare, social and political involvement, and experiences of sexuality and/or gender-related discrimination. From convenience sampling, a total of 6,502 LGBTQ+ Southerners participated in the survey, where approximately 5,045 identified as cisgender and 1,371 as transgender or gender diverse.

The thesis project will utilize the 2017 LGBT Institute Southern Survey dataset answer the following research questions:

1. What socio-demographic and categorical variables are associated with psychological distress, and are there evident disparities between LGB and transgender and gender diverse groups in mental health outcomes?
2. What socio-demographic and categorical variables are associated with healthcare coverage, and are there significant differences in health coverage between LGB and transgender and gender diverse groups?
3. Is there a significant linear relationship between psychological distress, health coverage & access after controlling for relevant socio-demographic and categorical variables? Is this relationship the same or different between LGB and transgender and gender diverse individuals? What about between those who are Black, Indigenous, or a Person of Color (BIPOC) and those who are White?

The Kessler Psychological Distress Scale (K6), a well-known assessment to determine levels of distress, anxiety, or depression one experienced in the past month, was utilized to collect mental health data from respondents in the health section of the LGBT Institute Southern Survey and will serve as the main dependent variable. Respondents were also asked if they were

covered by eight different health insurance types, with the last as an Other option to indicate another coverage type not included in the survey instrument. Respondents who answered 'No' for all types can be assumed to have no health coverage of any sort. Also in this section, respondents were asked if they experienced 10 different items of perceived barriers to care due to their sexual orientation or being transgender, such as difficulty in getting healthcare and avoiding treatment for fear of discrimination. Utilizing the socio-demographic data from the 2017 LGBT Institute Southern Survey in combination with the K6, health coverage, and perceived barriers to care questionnaires will allow for a more holistic analysis of the relationship between mental health, health coverage, and perceived barriers to care among and within the LGBTQ+ umbrella in the South.

Respondents to the 2017 LGBT Institute Southern Survey will be categorized by gender identity, race/ethnicity, and sexual orientation, and frequencies will be gathered among the selected socio-demographics and health-related variables to further describe the data. ANOVA and chi-square analyses will then be carried out to determine the association of psychological distress with the selected variables as well as the association of healthcare coverage to the descriptive variables. For the multiple linear regression analyses, it is hypothesized there will be a significant relationship between psychological distress with healthcare coverage and perceived barriers to care as the primary health interest variables, even after controlling for relevant socio-demographic variables. The final linear regression model will consider interactions with psychological distress in health coverage and perceived barriers to care by TGD and Persons of Color.

## Chapter 2: Literature Review

In 2017, Gallup surveyed approximately 350,000 individuals through randomized telephone surveys within the United States to collect annual data on sexual orientation. The surveys from Gallup data were then further analyzed by The Williams Institute at UCLA in 2018. The information published by the team at UCLA indicated that 4.5% of individuals surveyed self-identified as being a sexual minority (LGBT Data & Demographics, 2018). Within the same set of data, LGBT respondents were 58% female and 42% male. Most individuals who had responded were White (58%) while 21% were Latinx, 12% African American, 5% Multi-racial, 2% Asian and 1% for each American Indian and Native Hawaiian or Pacific Islander racial categories. Over three quarters (76%) of those who identified as LGBT were under the age of 50. LGBT individuals had a higher percentage of individuals who were unemployed (9%) compared to heterosexual individuals (5%). The data showed that LGBT respondents also had higher percentages of those who were uninsured (15%), which was 3% higher than the national average of 12% in 2018; and 25% made less than 24K annually compared to the 2018 national average of 18%. Education levels for LGBT respondents showed lower percentages of individuals who had graduated from college with a bachelor's degree (17% vs. 18%) or higher (13% vs. 14%). In a more recent Gallup poll in 2020, the total LGBT population has been estimated as 5.6%, with 54.6% of LGBT identifying as bisexual and 11.3% as transgender; however, the socio-demographic breakdown of the 15,000-participant sample has not yet been conducted by the William's Institute at UCLA (Jones, 2021).

From the 2017 Gallup surveys and analytical reports, it should be noted that although transgender individuals were included in the acronym of the survey and supportive reports, the survey did not actually include them. These surveys asked if one identified as male or female,

and then continues to ask if they identify as LGBT, which makes it not possible to properly record respondent's gender identity and ascertain from the surveys who identifies as just cisgender LGB from those who identify as transgender. This note is to say that we may have a loose idea of the proportion of the U.S. who identifies as LGB and understanding of the demographic LGB make-up, but we have even less understanding of those of transgender and gender diverse communities due to the tendency for demographic studies and the Census to operate within the binary of gender and lack inclusivity in design. The 2020 Gallup poll, however, did provide clarity on one's gender identity as well as give respondents the opportunity to indicate their sexual orientation; however, it has a much smaller sample size than in the 2017 Gallup poll with 350,000 participants and therefore may not be as comprehensive until further data are collected.

The 2015 U.S. Transgender Survey (USTS) from the National Center for Transgender Equality, however, fills in some of the missing demographics of transgender and gender diverse individuals in the U.S., although cannot answer the question of how much TGD communities compose the total U.S. population. The USTS is the largest survey that examines the experiences of transgender individuals and was conducted online with 27,715 respondents across 50 states. The USTS found that 29% of respondents were living in poverty compared to 12% in the general U.S. population, 15% were unemployed (vs. 5% in general in 2015), and 14% were uninsured (vs. 11% adults in the U.S. population; James et al., 2016).

The USTS also reported significant mental health disparities in transgender respondents vs. the general population: 39% of the respondents experienced serious psychological distress in the month prior to completing the survey compared to 5% in the general population. High levels of healthcare mistreatment were also reported by respondents, with 33% experiencing at least

one negative health experience due to their gender identity. More concerning, 23% of respondents chose to not seek healthcare due to the fear of mistreatment by healthcare providers and 33% did not receive needed care because they could not afford it. Topics of mental health, healthcare coverage and access will be explored more in detail in the below sections.

## **2.1 Mental Health**

The study of mental health among LGBTQ+ populations is complicated with a tainted history due to the misclassification of homosexuality as a mental illness up until the 1970s. Emerging LGBTQ+ health research since that time has found disproportionate mental health conditions among LGBTQ+ individuals compared to the general population. Cochran and Mays (2000) found significantly higher rates of mental health disorders among LGB respondents in the National Household Survey of Drug Abuse. In another analysis using the National Survey of Midlife Development, Cochran, Sullivan, and Mays (2003) found that LGB individuals had higher rates of depression, panic attacks, psychological distress, and generalized anxiety disorders as compared to the heterosexual participants. Similarly, Gilman et al. (2001) utilized the National Comorbidity Survey and found that those with same-gender sexual partners had higher 12-month prevalence rates of anxiety, mood, and substance use disorders along with more suicidal ideation and behaviors compared to respondents who had partners of a different gender assignment at birth. One qualitative and another cross-sectional study have found higher mental health disparities among those who identify as bisexual, which were linked to experiences of discrimination and poverty (Ross et al., 2010; Ross et al., 2020).

Unlike for the turnaround in the misclassification as homosexuality as a mental illness in the 1970s, being transgender and gender diverse was not removed as a mental health disorder until 2013 in the DSM V and replaced as gender dysphoria. Transgender and gender diverse

individuals historically face greater marginalization and stigma than those who are cisgender, even if they are LGB. In a population study based on online survey data, Su et al. (2016) found that, after controlling for selected confounders, transgender identity was associated with higher odds for reported discrimination, depression symptoms, and attempted suicides when compared to cisgender individuals. In a cross-sectional study among adults older than 50, Fredriksen-Goldsen et al. (2014) found that transgender older adults were at significantly higher risk of poor physical health, disability, experiencing depression, and perceived stress compared to cisgender older adults. The researchers also identified victimization and stigma as two top risk factors, which explained the highest proportion of the total effect of gender identify on health outcomes.

These mental health disparities have been attributed, not as in the past due to homosexuality and sexual & gender non-conformity, but to minority and social stress (Meyer, 2003). Minority stress theory (Meyer, 2003) proposes that the existing mental health disparities across sexual, gender and racial/ethnic minorities can be explained in large part by the external stressors of living in a hostile, heteronormative—and cisgender normative—culture which often results in a lifetime of maltreatment, discrimination, and victimization, ultimately contributing to perceived barriers to care. Discrimination in itself is significantly associated with depression, generalized anxiety disorder, substance abuse, and psychiatric morbidity (McLaughlin et al., 2010). The effect of racism and race-related stress on mental health has also been established in the literature (Pieterse et al., 2012; Platt & Scheitle, 2018). Additionally, mental health concerns have been linked to poverty and disability status (Nakkeeran, 2018).

Mental health concerns overall contribute to vast inequalities, intersect of a variety of public health issues, and contribute substantial health burdens: every year, 30% of the global population is affected by mental disorders, of which over two-thirds are untreated or under-



treated (Nakkeeran, 2018). People with mental health conditions often have poorer health status, experience higher mortality rates for several chronic disease conditions, have increased likelihood to delay and non-adhere to treatment, and are more prone to engage in high-risk behaviors such as substance abuse (Nakkeeran, 2018). Addressing mental health and disparities is vital to improve population health and related inequities.

## **2.2 Healthcare Coverage**

According to the literature, adults that do not have health coverage have less access to recommended care, receive poorer quality of care, and exhibit worse health outcomes than insured adults (McWilliams, 2009). From a Kaiser Family Foundation analysis of the 2017 National Health Interview survey, it was reported that one in five (20%) of uninsured adults went without needed care in the past year because of costs compared to 3% and 8% of adults with private and public coverage respectively (Garfield et al., 2019). The analysis also found that adults who are uninsured were over three times more likely than insured adults to say they have not had a visit about their own health to a doctor or other health professional's office or clinic in the past 12 months. Due to delays in accessing and receiving quality care, individuals who are uninsured are more likely of being diagnosed at later stage of diseases, have higher mortality rates, and greater hospitalizations rates than those with coverage (Garfield et al., 2019).

Research has also demonstrated that gaining health insurance considerably improves access to care and reduces the adverse health effects of being uninsured. A study of Medicaid expansion in Oregon found that uninsured adults who gained Medicaid coverage were more likely to have an outpatient visit or receive a prescription and less likely to have short-term depression or stress than their peers who remained uninsured (Finkelstein et al., 2011). The researchers' results from this study also allude to a relationship between health coverage and

mental health, as those who gained coverage in the study had lower prevalence of depression and stress than those who remained uninsured.

Medicaid expansion, as one health policy tool for increasing levels of health coverage and improving health equity, works by providing an accessible, affordable coverage option to lower income individuals and minorities, which account for over half of the uninsured population (DeNavas-Walt et al., 2009; Majerol, 2015). According to a report by the Commonwealth Fund, 44% of the uninsured are comprised of working age adults from ages 19 to 34, 58% are below the 200% Federal Poverty Line (FPL), and one-third (35%) are Latino (Munira et al., 2019). As of January 2021, 12 states have not expanded Medicaid eligibility to all uninsured adults and families up to 138% FPL, all of which are in the South besides Wisconsin and Wyoming. According to Kaiser Family Foundation, 97% of adults in the 2.2 million coverage gap reside in the South (Garfield et al., 2021). Of those 2.2 million uninsured adults, 35% are in Texas, 19% in Florida, 12% in Georgia, 10% in North Carolina, and 24% in the remaining eight states who have decided not to expand Medicaid (Garfield et al., 2021).

There is limited research, beyond that of the descriptive from Gallup polls and the USTS, pertaining to healthcare coverage in LGBTQ+ populations and related disparities, but there is enough to there to suggest these disparities exist. The Center American Progress analyzed 2007 surveys from the California Health Interview Survey (CHIS) where it was found that 82% of heterosexuals, 77% of LGB, and 57% of transgender respondents had healthcare coverage (Krehely, 2009). These are stark coverage differences between groups, signifying health disparities that have yet to be fully understood. It should be mentioned that these descriptive studies were last done prior or early in the rollout of the ACA, which began in 2013, so it is uncertain how much these disparities improved since the 2015 USTS. Both were also prior to

Obergefell v. Hodges in 2015, which legalized same-sex marriage in the U.S., thus it could be possible that with the ability of LGBTQ+ individuals obtain the right of marriage and its benefits, the disparities in health coverage between these groups could have changed since 2015. The impact from expanded rights, however, may not have been too effective in closing some of the coverage disparities among LGBTQ+ individuals as expected, as employers can still choose to offer health insurance to some couples but not others, especially in states without non-discrimination ordinances including sexual orientation or choose to not recognize same-sex marriages. For instance, in a nationally represented study in 2017, it was found that only 57% of firms offer health benefits to employees who had partners of either the same or different gender assignment at birth (Kates et al., 2018).

### **2.3 Perceived Barriers to Care**

Research has demonstrated how discrimination in healthcare acts as a barrier to care, especially for socially disadvantaged groups and minorities (Rivenbark & Ichou, 2020). Prior studies have found that experiencing perceived discrimination in healthcare reduces individuals' trust and satisfaction with healthcare systems and increases the chances of delaying care and foregoing seeking care altogether (Rivenbark & Ichou, 2020). This correlation between experiencing perceived discrimination and healthcare utilization has been primarily studied for racial/ethnicity-based and socioeconomic status-based discrimination (Lee et al., 2009; Rivenbark & Ichou, 2020), but there has been more research specific to that of gender and sexual orientation-based healthcare discrimination.

Data from a nationally representative Center for American Progress (CAP) survey conducted in 2017 show that LGBTQ+ people experience discrimination in health care settings, that discrimination discourages them from seeking care, and that LGBTQ+ individuals have

difficulty finding alternative services if they are turned away (Mirza & Rooney, 2018). Rates of discrimination are higher among transgender respondents than LGB respondents in the 2017 survey (Mirza & Rooney, 2018). For instance, 29% of transgender respondents reported that a doctor or healthcare provider refused to see them because of their perceived gender identity, while this only happened among 8% of the LGB respondents based on perceived sexual orientation identity (Mirza & Rooney, 2018). Among those who experienced discrimination based on their sexual or gender identity in the past year, 14% avoided or postponed needed medical care due to fear and disrespect from the healthcare system and staff. For transgender respondents alone, 22% reported such avoidance and delays in seeking care, which closely aligns with the 2015 USTS findings in that one in four (23%) transgender individuals avoided seeking needed healthcare (Mirza & Rooney, 2018; James et al., 2016).

Besides discrimination, mistreatment and stigma, there are other reasons LGBTQ+ individuals may choose to delay and forego seeking healthcare. A 2013 CAP survey found that among LGBTQ+ individuals estimated to have incomes under 400% of the federal poverty level (FPL), almost 4 in 10 had medical debt and more than 40% reported postponing medical care due to costs (Kates et al., 2018). The 2017 USTS survey found that one-third (33%) of transgender respondents postponed or went without care when they were sick because they could not afford it (James et al., 2016). In addition, many health plans include transgender-specific exclusions that deny transgender individuals' coverage of services, such as gender affirming surgeries, mental health services, and hormone therapy, which is a major TGD-specific barrier to care (Kates et al., 2018).

## **2.4 Summary of Literature and Research Gaps:**

Several studies have been done to understand the health needs of LGBTQ+ individuals to begin to address known health disparities in mental health, healthcare coverage and perceived barriers to care. From the literature, LGBTQ+ individuals, especially among those who are transgender, have poorer mental health outcomes, such as anxiety and depression, than the general population. While greater health needs of the LGBTQ+ population are clear, multiple cross-sectional studies have shown that LGBTQ+ individuals face greater hindrances and barriers in obtaining healthcare coverage, accessing healthcare, and receiving culturally responsive care where one does not feel discriminated and/or violated. The Southern region of the U.S. contains 97% of those who fall into the healthcare coverage gap, largely due to poorer safety net and healthcare infrastructures and lack of support for full Medicaid expansion. The Southern region of the U.S. also lacks statewide policies that protect against discrimination for gender identity and sexual orientation. While a greater proportion of LGBTQ+ populations live in the South than other regions, the policies and practices in Southern states may more than often fail to meet their health needs and contribute to health disparities.

From the available literature, several research gaps are apparent. There is a lack of research which is focused specifically in the South and on LGBTQ+ Southerners to assess health statuses and needs. Additionally, there are limited research studies that investigate the mental health impacts of being uninsured and experiencing perceived barriers to care in a healthcare setting, either among LGBTQ+ populations or in the general population. As in other research areas, the need for studies which look across gender (i.e. nonbinary, trans male, etc., vs. just transgender) and racial/ethnic groups is important to mention and include in health disparity-related research. Given these research gaps, this thesis project designed to fill in some of these research gaps of interest, primarily in examining the relationship healthcare coverage and

perceived barriers to care has on mental health and how those effects differ between sexual orientation, gender, and racial/ethnic groups in the Southern U.S.

## Chapter 3: Methodology

2017 LGBT Institute Survey data were imported into Statistical Analysis System Version 9.4M7 (SAS 9.4) to prepare and conduct the analyses. Prior to conducting any statistical analytic procedures, the variables of interest were cleaned for systemic missing errors due to its origin as a Statistical Package for the Social Sciences (SPSS) data file as well as recoded into the same or different variables. Once the data were cleaned and reorganized, overall frequencies for the sample with a breakdown by gender were gathered. A Chi-Square Test of Independence was also performed to ascertain the significant association with healthcare coverage among the different predictor variables. The Bonferroni correction post hoc test was also applied here for the statistically significant variables to note which groups with significantly different from each other and to adjust for multiple comparisons.

On the inferential statistics side, an Analysis of Variance (ANOVA) procedure was conducted to determine associations between psychological distress and the categorical variables of interest with Bonferroni post hoc test (with  $\alpha=0.05$ ) to examine group mean differences. Following the ANOVA, multiple linear regression models were carried to determine if there is a linear relationship between psychological distress, health coverage, and perceived barriers to care after controlling for relevant socio-demographic and categorical variables. In Block 1, the model only contains the health coverage and perceived barriers to care interest variables; Block 2 brings in the primary socio-demographic variables of gender, sexual orientation, and race; Block 3 includes all the broader socio-demographics variables into the model; and lastly, Block 4 includes the addition of interaction terms between health coverage and perceived barriers to care with among the TGD respondents and Persons of Color (POC). For the multiple linear

regression, p-values were considered significant when less than 0.05 for all the models generated.

### **3.1 2017 LGBT Institute Southern Survey**

2017 LGBT Institute Southern Survey data were collected using an untraceable, online anonymous survey of self-identified LGBTQ+ adults living in 14 U.S. states, including: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. The survey instrument was developed in close collaboration with LGBTQ+ activists and organizations with the aim of collecting critical data on educational and employment status, health and access to healthcare, social and political involvement, and experiences of sexuality and/or gender-related discrimination. Respondents who first were interested in participating had to screen to confirm that they were over 18 years of age, identified as LGBT, and lived in one of the 14 focal states before they could complete the survey.

The survey instrument utilized a branching method where individuals who indicated they were LGB but not transgender were separated onto a different track than those who indicated they were transgender or gender diverse. Although this separation occurred, most respondents received the same questions, but the questions were more geared towards the identities they specified early in the survey. For instance, in section 10 for the general discrimination questionnaire, respondents who indicated they were LGB received this question: “For each of the following, please indicate whether or not it has happened to you because you are or were perceived to be {Sexual Orientation}.” Transgender and gender diverse individuals who indicated they were LGB also received that question in addition to: “For each of the following, please indicate whether or not it has happened to you because you are, or were perceived to be,



transgender.” A convenience sampling technique with the support of LGBTQ+ organizations in the 14 focal states was utilized to recruit participants for the study. A total of 6,502 LGBTQ+ Southerners participated in the survey via Qualtrics across the applicable Southern states, where approximately 5,045 identified as cisgender and 1,371 as transgender or gender diverse.

### **3.2 Variable Selection Rationale and Dummy Coding**

Psychological distress from the Kessler Six-Item (K6) questionnaire was utilized as the primary dependent variable in this study. The predictor variables selected were gender identity, sexual orientation, race/ethnicity, health coverage, healthcare access and discrimination, household income, employment status, partnership status, disability status, HIV status, experience of discrimination in the past 12 months, and age. Healthcare coverage and perceived barriers to care were the primary health predictors of interest. Sexual orientation, gender identity and race/ethnicity were classified as the primary socio-demographic predictors. Household income, employment status, partnership status, disability status, HIV status, experience of discrimination in the past 12 months, and age were classified as the broader socio-demographic variables in the study. All predictor variables were selected and included in the study to answer the research questions of interest, such as whether there are different between gender or racial groups, as well as informed by the literature in their relevance to psychological distress and healthcare coverage and perceived barriers to care.

#### **3.2.1 Psychological Distress**

From the K6 questionnaire, a summative psychological distress variable was recoded and computed with a score range of 0 to 24 within the timeframe of 30 days. For instance, if one indicated they felt hopeless “None of the time” in the past 30 days, they would receive 0 points for psychological distress for that item while one who answered “All of the time” would get 4

points on the scale and so on. The higher the total score generally can be interpreted as signifying higher levels of psychological distress, such as anxiety and depression.

### **3.2.2 Health Interest Variables**

#### **Health Insurance Coverage:**

In the Health and Wellness section of the survey, participants were asked if they were covered by eight different types of health insurance plans: Private, Employee-Sponsored, Medicaid, Medicare, Tricare, Veteran's Affairs Healthcare, the Indian Health Service, or another type of health coverage plan. Participants who responded "No" to all eight coverage options were indicated to have no health coverage while those who responded "Yes" to having one of the eight types of coverage were coded as having coverage. As those who were missing were excluded, only 4,741 of the participants in the survey were categorized as insured or not. Those who have health coverage serve as the reference group in the model due to being the larger group.

#### **Perceived Barriers to Care:**

Also in the Health and Wellness section, respondents indicated situations they have experienced or not in accessing healthcare related to their sexual identity and/or being transgender. Respondents who answered that they have never accessed healthcare services were recoded as missing to fully assess healthcare access difficulties and perceived barriers to care among those that have accessed healthcare. If a participant responded that they experienced difficulty or any negative experience related to accessing healthcare services, they were coded as having perceived barriers to care. Those who responded that they never experienced any of the situations given in accessing healthcare were coded as not having any perceived barriers to care. As the larger group, those who indicated they have perceived barriers to care serve as the reference group in the regression models.

### 3.2.3 Primary Socio-demographic Variables

#### Gender Identity:

Of the 6,502 who answered the gender identity questions, 6,416 were counted in the final recoded variable in order to exclude those who responded to one of the gender questions (“What gender were you assigned at birth?” or the other (“Are you a transgender person?”) but not both. Respondents who had missing data for both gender and transgender status questions were also excluded. Utilizing an already recoded gender variable in the dataset, a final gender variable, *GenderT*, was created to consolidate and relabel the gender identities. For instance, “Man & Not Transgender” in the original variable was recoded into *GenderT* with the value format of “Cis Man,” and so on. Respondents who indicated they were “Other and Not Transgender” and “Other and Transgender” in the original variable were recoded and combined in *GenderT* as “Other.” This decision was made in part given the small group counts for each as well as to further consolidate the gender groups into just five categories from the original 11. The Other gender group is assumed to include individuals who would identify as gender diverse, including identities such as genderqueer, genderfluid, non-binary, etc. It should be noted, however, that some individuals in this category may also identify as transgender, but do not fit or align with the binary transgender categories as trans man or trans woman.

The *GenderT* variable was utilized for the descriptive statistics and the ANOVA analysis to describe the sample and assess statistical differences among the different gender identity groups. For the linear regression model, four dummy coded variables from *GenderT* were created where cis women, trans men, trans women and gender diverse individuals are compared to the reference group, cis men. Although cis men are not the largest group in the sample, they were selected as the reference group since they have the most privilege out of the gender groups.

For the interaction term, another binary variable was used which groups transgender respondents as well as the other groups into a transgender and gender diverse category with cisgender respondents as the reference group, due to larger size. This variable was utilized instead of the separate transgender variables as the interaction term to override the significance of the other interaction terms in the final linear regression model.

**Sexual Orientation:**

An already recoded variable in the dataset, *sexorient*, was utilized for sexual orientation, which classified respondents' sexual orientation identity based on their self-reported sexual orientation identity and sexual attraction and behavior questions. 6,362 participants were able to be categorized based on their responses into five categories: Heterosexual, Lesbian, Gay, Bisexual, and Other. The Other group can be assumed to compose of those who identify as queer, pansexual, polysexual, asexual, and/or other diverse identities that do not fit or align with the traditional LGB categories for sexual orientation.

The *sexorient* variable was used for the descriptive statistics and ANOVA analysis, but for the linear regression, four dummy coded variables were created where lesbians, bisexuals, other sexual orientation, and straights are individually compared to those who identified as gay in the sample. Those who identify as gay were selected as the reference group as they are the largest group in the sample.

**Race/Ethnicity:**

The recoded *race\_hispanic* variable in the dataset was used to categorize racial/ethnic identity. Participants who were missing for either ethnic or racial identity were excluded, leaving 6,005 participants with categorized racial and ethnic identities. Participants who indicated they were Non-Hispanic Hawaiian or Pacific Islander (n=5) were combined with Asian Only (n=71)

respondents into a single Asian and Pacific Islander group (n=76). In total, there are seven racial/ethnic categories: White Only, Black Only, Asian and Pacific Islander Only, Other Non-Hispanic, Multi-Racial Hispanic, and Hispanic. All respondents that indicated they were Hispanic, despite race, were categorized as Hispanic, to consolidate the racial/ethnic groups.

From this variable, a dummy coded *BIPOC* variable was created to group those who are Black, Indigenous and a Person of Color and those who are not for the linear regression. It should be noted that in the *BIPOC* variable, those who indicated they were White Hispanic were categorized as not BIPOC while those who identified as Black, Native American/Alaskan Native, Asian and Pacific Islander, Multi-Racial, Other, and Hispanic Non-White were categorized as BIPOC. Those who are White, or non-BIPOC, serve as the reference group, as the largest comparative group.

### **3.2.4 Broader Socio-demographic Variables**

#### **Household Income:**

To categorize the income among respondents, the already recoded variable, *HouseIncBrackets*, were used, which was created from the questions asking participants to report their household income from all sources in 2016. The recoded variable broke respondents' self-reported household income into separate brackets with intervals of \$20,000. The range of the household income brackets span from below \$20,000/year to greater than \$120,000/year. Those who responded, "Prefer not to answer," (n=356) were recoded as missing for the analysis. A total of 2,796 respondents were included in the final recoded variable, which was used for the descriptive statistics.

For the chi-square, ANOVA, and linear regression, a dummy coded household income variable was created from *HouseIncBrackets* to further simplify this category and prepare for

linear regression modeling. In the dummy coded variable, households who made under \$60,000/year or less were compared to households who made \$60,000/year or more (reference group). Both these income bracket groups were selected to compare more resource scarce, lower- and middle-income households to those with more resources. The reference group was selected due to the larger proportion of households who make greater than the median household income in 2016, which was \$57,617, in the sample. To account for the large number of missing data, a mean imputation procedure was utilized, in which the mean of the original *HouseIncBrackets* variable replaced missing values in the adjusted dummy coded variable. Since the mean of the initial variable was above the median income threshold, the missing values were grouped with the reference group.

**Education:**

An already recoded variable, *EdAttainmentGroups*, was utilized to categorize the highest educational attainment that participants self-reported in the survey into four categories: High School, GED, or Less; Some College or 2 Year Degree; 4 Year Degree; and Graduate or Advanced Degree. 5,017 participants responded to the question pertaining to highest educational attainment and were able to be categorized for the descriptive statistics. For the chi-square, ANOVA and linear regression, a dummy coded variable was created to compare those who have high school or some college educational level to those who have a four-year degree or higher (reference group). Some college was combined with high school or less due to the size of those having no college being very small in the sample (n=342). Due to the larger proportion of college educated respondents in the sample, college degree-holders were selected as the reference group.

**Employment Status:**

An already recoded variable, *A211\_EmpStat*, was used for the descriptive statistics and recreated into a dummy coded variable for the chi-square, ANOVA and linear regression. Those who responded “Other” were recoded as missing in the variable. Part-time and full-time student were recoded into one category for students in the descriptive variable. In the dummy coded variable, those who worked full-time (reference group) were compared to all others who do not hold full-time employment. More than half of the sample had full-time jobs, so they were selected as the reference group.

**Partnership Status:**

For the descriptive statistics, relationship status was kept as the seven original categories, which were married; single, never married; dating, not married; civil union or domestic partnership; divorced, single; divorced, remarried; and widowed. In the dummy coded variable used in the chi-square, ANOVA, and linear regression analyses, individuals who were single, never married, or single divorced were compared to all other groups who were predominantly in a relationship, married or partnered, as the larger group.

**Disability Status:**

There is a questionnaire in the Health and Wellness section of the survey concerning general ability, spanning from physical, mental, and emotional abilities to carry out essential daily life tasks. If participants responded “Yes” to one of the six questions concerning ability, such as being blind, having serious difficulty walking or making decisions, they were coded as having a disability while participants who responded no to all the related questions were coded as not having a disability (reference group). It should be noted that those individuals may not self-identify as having a disability, even if they may have indicated impairments in ability and/or

having a physical, mental, or emotional condition that affects their capacity to carry out activities of daily living.

**HIV Status:**

Respondents were asked about their HIV status in the survey. Individuals who responded either “Don’t know” (n=588) or “Prefer not to answer” (n=17) were recategorized into an Unknown HIV status category, as their HIV status was not specified or known. For the linear regression, a separate dummy coded HIV variable was created which compared those who are HIV+ to those who are HIV- or had unknown HIV status as the reference and larger sized group.

**Discrimination in the Past Year:**

Respondents answered a general discrimination questionnaire based on sexual orientation and, if they were transgender or gender diverse, based on gender identity. If the respondents experienced any of the following types of discrimination in the past year of taking the survey, they were coded as having experienced discrimination in the past year: 1) Been threatened or physically attacked 2) Been subject to slurs or jokes 3) Been unfairly untreated by an employer 4) Been rejected by a family member or friend and/or 5) Been mistreated by the police. Those who did not experience any of these forms of general discrimination based on sexual orientation and/or being transgender in the past 12 months were coded as not experiencing discrimination in the past year and served as the reference group, due to larger size. The five forms of general discrimination were selected due to their relevance and potential impact on mental health and to further consolidate this variable for statistical analysis.

**Age:**

Eligible respondents 18 and older were asked how old they were at the time of the survey. The age they indicated was kept as a ratio variable and not changed or recoded.





## Chapter 4: Results

### 4.1 Demographic Data for Respondents

The total demographic data for the sample can be found in Table 1. Respondents overall identified as cisgender (78.63%) in the survey while 9.12% identified as binary transgender and 12.25% as gender diverse. A large proportion of the sample were White only (79.02%) with smaller shares identifying as Black (6.99%), Multi-Racial (3.63%), and Hispanic (7.83%). Over half (59.55%) of the respondents were under 40 years of age. The sample were also largely educated, with 65.96% of respondents holding a bachelor's degree or higher. Relatedly, one-third of respondents (32.69%) reported household incomes greater than \$100,000/year and over half (55.29 %) were working full-time. Half of the sample (55.34%) had never been married while 32.82% were married. 38.40% of the sample experienced discrimination in the past year, and 32.34% indicated having perceived barriers to care. 9.01% of the sample is uninsured (n=427); 29.83% indicated that they had a physical, mental and/or emotional condition, which can be considered as a disability. A small percentage of the sample indicated they were HIV+ (3.88%) and four times as many (12.83%) stated that they did not know their HIV status. The average psychological distress score was 8.3 out of a scale of 24 for the sample.

**Table 1:** Socio-Demographic Data for the Overall Sample

<b>Categorical Variables</b>	<b>Overall Sample % (N)</b>
<b>Gender</b>	6,416
Cis Man	35.10 (2,252)
Cis Woman	43.53 (2,793)
Trans Man	4.41 (283)
Trans Woman	4.71 (302)
Other	12.25 (786)
<b>Sexual Orientation</b>	6,362
Heterosexual	6.84 (435)

Lesbian	24.24 (1,542)
Gay	33.09 (2,105)
Bisexual	20.89 (1,329)
Other	14.95 (951)
<b>Race and Ethnicity</b>	6,005
White Only	79.02 (4,745)
Black Only	6.99 (420)
American Indian or Alaska Native	0.50 (30)
Asian and Pacific Islander Only	1.27 (76)
Other, Non-Hispanic	0.77 (46)
Multi-Racial, Non-Hispanic	3.63 (218)
Hispanic	7.83 (470)
<b>Age Groups</b>	6,502
18≤29	37.03 (2,408)
30≤39	22.52 (1,464)
40≤49	15.60 (1,014)
50≤59	13.83 (899)
60≤69	8.47 (551)
≥70	2.55 (166)
<b>Education</b>	5,017
High School, GED, or Less	6.82 (342)
Some College or 2 Year Degree	27.23 (1,366)
4 Year Degree	29.94 (1,502)
Graduate or Advanced Degree	36.02 (1,807)
<b>Household Income Brackets</b>	2,796
<\$20,000	10.84 (303)
\$20,000≤\$39,999	14.41 (403)
\$40,000≤\$59,999	15.38 (430)
\$60,000≤\$79,999	14.70 (411)
\$80,000≤\$99,999	11.98 (335)
\$100,000≤\$119,999	9.76 (273)
≥\$120,000	22.93 (356)
<b>Partnership Status</b>	4,732
Married	31.45 (1,488)
Civil Union or Domesticated Partnership	4.04 (191)
Dating, Not Married	24.30 (1,150)
Single, Never Married	31.04 (1,469)
Divorced, Single	6.53 (309)
Divorced, Remarried	1.37 (65)
Widowed	1.27 (60)
<b>Employment Status</b>	5,853

Working Full-Time	55.29 (3,236)
Working Part-Time	8.00 (498)
Not Working	2.20 (129)
Unemployed	2.84 (166)
Retired	7.59 (444)
Student	10.68 (625)
Homemaker	1.81 (106)
Two or more types	11.60 (679)
<b>Discrimination in the past year</b>	4,122
Yes	38.40 (1,583)
No	61.60 (2,539)
<b>Health Coverage</b>	4,741
Yes	90.99 (4,314)
No	9.01 (427)
<b>Disability Status</b>	4,656
Yes	29.83 (1,389)
No	70.17 (3,267)
<b>HIV Status</b>	4,715
Positive	3.88 (183)
Negative	83.29 (3,927)
Unknown	12.83 (605)
<b>Perceived Barriers to Care</b>	4,471
Yes, experienced	32.34 (1,446)
Haven't experienced	67.66 (3,025)
<b>Quantitative Variables</b>	
<b>Psychological Distress</b>	4,649
Mean (Min, Max)	8.3 (0-24)
Standard Deviation	5.733
<b>Age</b>	6,502
Mean (Min, Max)	38.17 (18-99)
Standard Deviation	14.8

#### 4.1.2 Socio-Demographics by Gender

As illustrated in Table 2, trans men and those who are gender diverse were more likely to identify as other by sexual orientation than the other gender groups with representation of 30.04% and 52.01% respectively. Trans men also had the greatest Hispanic representation in the sample at 12.4% while trans women had the highest proportion of White representation at

82.83%. Cis men represented the highest proportion of Black, Non-Hispanic in the sample at 8.39%. By age, trans men and gender diverse individuals were the youngest represented gender groups in the sample with 59.72% of trans men and 61.45% of gender diverse individuals under 30 years of age. Both trans men and trans women disproportionately had lower levels of education than the other gender groups with 14.60% of trans men and 12.11% of trans women having a high school diploma, GED or less in education.

All transgender and gender diverse groups had lower household income than the cisgender groups, with 22.03% of trans men, 20.00% of trans women, and 21.08% of gender diverse respondents reporting household incomes \$20,000/year or below. Cis men and cis women have greater proportions of being married than the other gender groups, at 37.52% and 36.59% respectively. Transgender and gender diverse respondents had the lower proportion of those who work full-time compared to cis men and cis women. Additionally, transgender and gender diverse respondents had higher uninsured representation than the cisgender groups: 8.96% of trans men, 12.92% of trans women, and 11.34% of gender diverse respondents were uninsured. Trans men, trans women, and gender diverse respondents also represented a greater share of respondents who indicated having a type of physical, mental, or emotional disability. Cis men had the greatest HIV+ proportion among respondents while gender diverse respondents had the highest proportion of not knowing their HIV status. Transgender and gender diverse respondents disproportionately experienced greater discrimination in the past year and perceived barriers to care than the cisgender groups.

Table 2: Socio-Demographic Data by Gender

		Self-Identified Gender, % (N)					Total
		Cis Man	Cis Woman	Trans Man	Trans Woman	Other	
<b>Sexual Orientation</b>	Heterosexual	3.82 (86)	7.84 (218)	26.50 (75)	14.57 (44)	1.60 (12)	6.84 (435)
	Lesbian	0.18 (4)	47.48 (1,320)	3.18 (9)	33.77 (102)	14.30 (107)	24.24 (1,542)
	Gay	85.37 (1,920)	1.47 (41)	16.25 (56)	3.31 (10)	11.76 (88)	33.09 (2,105)
	Bisexual	8.18 (184)	30.00 (834)	24.03 (68)	30.13 (91)	20.32 (152)	20.89 (1,329)
	Other	2.45 (55)	13.20 (367)	30.04 (85)	18.21 (55)	52.01 (389)	14.95 (951)
<b>Race</b>	White Only	79.23 (1,652)	79.93 (2,103)	70.44 (193)	82.83 (246)	76.74 (551)	79.02 (4,745)
	Black Only	8.39 (175)	6.77 (178)	6.57 (18)	2.36 (7)	5.85 (42)	6.99 (420)
	American Indian or Alaska Native	0.53 (11)	0.57 (15)	0.73 (2)	0.67 (2)	0.00 (0)	0.50 (30)
	Asian and Pacific Islander Only	1.25 (26)	1.14 (30)	2.55 (7)	1.01 (3)	1.39 (10)	1.27 (76)
	Multi-racial, Non-Hispanic	2.49 (52)	3.46 (91)	6.20 (17)	5.72 (17)	5.71 (41)	3.63 (218)
	Other, Non-Hispanic	0.67 (14)	0.57 (15)	1.09 (3)	0.67 (2)	1.67 (12)	0.77 (46)
	Hispanic	7.43 (155)	7.56 (199)	12.41 (34)	6.73 (20)	8.64 (62)	7.63 (470)
<b>Age Groups</b>	18≤29	26.64 (600)	37.20 (1,039)	59.72 (169)	23.51 (71)	61.45 (483)	36.81 (2,362)
	30≤39	21.67 (488)	24.38 (681)	21.20 (60)	21.19 (60)	19.59 (154)	22.55 (1,447)
	40≤49	18.29 (412)	15.79 (441)	7.77 (22)	17.88 (54)	9.67 (76)	15.66 (1,005)
	50≤59	19.18 (432)	12.35 (345)	6.36 (18)	17.88 (54)	5.34 (42)	13.89 (891)
	60≤69	10.88 (245)	7.98 (223)	4.59 (13)	14.24 (43)	3.05 (24)	8.54 (548)
	≥70	3.33 (75)	2.29 (64)	0.35 (1)	5.30 (16)	0.89 (7)	2.54 (163)
<b>Education</b>	High School, GED, or Less	6.35 (111)	5.41 (118)	14.60 (33)	12.11 (31)	8.06 (49)	6.82 (342)
	Some College or 2 Year Degree	23.81 (416)	25.87 (564)	40.71 (92)	35.16 (90)	33.55 (204)	27.23 (1,366)
	4 Year Degree	31.02 (542)	29.40 (641)	28.32 (64)	26.56 (68)	30.76 (187)	29.94 (1,502)
	Graduate or Advanced Degree	38.81 (678)	39.31 (857)	16.37 (37)	26.17 (67)	27.63 (168)	36.02 (1,807)
<b>Household Income Brackets</b>	<\$20,000	7.20 (68)	8.61 (107)	22.03 (26)	20.00 (28)	21.08 (74)	10.84 (303)
	\$20,000≤\$39,999	11.76 (111)	13.52 (168)	26.27 (31)	17.14 (24)	19.66 (69)	14.41 (403)
	\$40,000≤\$59,999	13.67 (129)	15.93 (198)	13.56 (16)	15.71 (22)	18.52 (65)	15.38 (430)
	\$60,000≤\$79,999	14.19 (134)	15.45 (192)	10.17 (12)	17.86 (25)	13.68 (48)	14.70 (411)
	\$80,000≤\$99,999	11.02 (104)	14.16 (176)	8.47 (10)	8.57 (12)	9.40 (33)	11.98 (335)

	\$100,000≤\$119,999	9.22 (87)	11.02 (137)	8.47 (10)	8.57 (12)	7.69 (27)	9.76 (273)
	≥\$120,000	32.94 (311)	21.32 (265)	11.02 (13)	12.14 (17)	9.97 (35)	22.93 (641)
<b>Partnership Status</b>	Married	37.52 (625)	36.59 (757)	21.80 (46)	30.04 (70)	20.43 (113)	31.45 (1,488)
	Civil Union or Domesticated Partnership	3.48 (58)	4.49 (93)	4.27 (9)	1.72 (4)	4.88 (27)	4.04 (191)
	Dating, Not Married	21.43 (357)	24.84 (514)	29.38 (62)	16.31 (38)	32.37 (179)	24.30 (1,150)
	Single, Never Married	37.52 (625)	24.84 (514)	35.07 (74)	26.61 (62)	35.08 (194)	31.04 (1,469)
	Divorced, Single	5.40 (90)	6.09 (126)	8.06 (17)	19.31 (45)	5.61 (31)	6.53 (309)
	Divorced, Remarried	0.54 (9)	2.08 (43)	1.42 (3)	3.00 (7)	0.54 (3)	1.37 (65)
	Widowed	1.50 (25)	1.06 (22)	0.00 (0)	3.00 (7)	1.08 (6)	1.27 (60)
<b>Employment Status</b>	Working Full-Time	60.74 (1,230)	55.42 (1,431)	46.97 (124)	53.66 (154)	42.73 (297)	55.29 (3,236)
	Working Part-Time	6.12 (124)	8.21 (212)	9.47 (25)	10.80 (31)	10.94 (76)	8.00 (468)
	Not Working	2.42 (49)	2.01 (52)	3.41 (9)	1.39 (4)	2.16 (15)	2.20 (129)
	Unemployed	2.57 (52)	1.98 (51)	3.79 (10)	8.36 (24)	4.17 (29)	2.84 (166)
	Retired	9.98 (202)	7.13 (184)	6.06 (16)	10.80 (31)	1.58 (11)	7.59 (444)
	Student	8.69 (176)	10.11 (261)	17.05 (45)	6.27 (18)	17.99 (125)	10.68 (625)
	Homemaker	0.89 (18)	2.44 (63)	1.14 (3)	2.44 (7)	2.16 (15)	1.81 (106)
	Two or more types	8.59 (174)	12.70 (328)	12.12 (32)	6.27 (18)	18.27 (127)	11.60 (679)
<b>Health Coverage</b>	Yes	91.40 (1,510)	93.22 (1,924)	91.04 (193)	87.08 (209)	88.66 (508)	90.99 (4,314)
	No	8.60 (142)	6.78 (140)	8.96 (19)	12.92 (31)	11.34 (65)	9.01 (427)
<b>Disability</b>	Yes	20.25 (323)	28.94 (587)	40.00 (84)	49.37 (118)	48.77 (277)	29.83 (1,389)
	No	79.95 (1,288)	71.06 (1,441)	60.00 (126)	50.63 (121)	51.23 (291)	70.17 (3,267)
<b>HIV Status</b>	Positive	10.42 (171)	0.15 (3)	0.00 (0)	2.07 (5)	0.70 (4)	3.88 (183)
	Negative	82.57 (1,355)	84.74 (1,738)	84.43 (179)	85.89 (207)	78.60 (448)	83.29 (3,927)
	Unknown	7.01 (115)	15.11 (310)	15.57 (33)	12.03 (29)	20.70 (118)	12.83 (605)
<b>Discrimination in the Past Year</b>	Yes	33.13 (477)	34.38 (612)	49.73 (93)	66.22 (149)	54.17 (281)	38.80 (1,583)
	No	66.88 (963)	65.62 (1,168)	50.27 (94)	33.78 (76)	45.86 (238)	61.60 (2,539)
<b>Perceived Barriers to Care</b>							
	Yes, experienced	21.74 (337)	23.96 (463)	74.16 (155)	59.74 (138)	64.30 (353)	67.66 (3,025)
	Haven't experienced	78.26 (1,213)	76.04 (1,469)	25.84 (54)	40.26 (93)	35.70 (196)	32.34 (1,446)

## 4.2 Chi-Square Test of Independence with Healthcare Coverage

As seen in Table 3, from the overall Pearson chi-square test of independence, gender identity ( $p < 0.001$ ), race ( $p < 0.001$ ), education ( $p < 0.0001$ ), household income ( $p < 0.0001$ ), partnership status ( $p < 0.0001$ ), employment status ( $p < 0.0001$ ), disability ( $p < 0.0001$ ), HIV status ( $p < 0.001$ ), experiencing discrimination in the past year ( $p < 0.0001$ ), and perceived barriers to care ( $p < 0.0001$ ) were statistically significant in their association with healthcare coverage. Age and psychological distress were also significantly associated with healthcare coverage ( $p < 0.0001$ ) in two-sample independent t-tests.

Among the gender identity sub-categories, trans women and gender diverse individuals had the highest uninsured proportions at 13.3% and 12.7% respectively and were statistically different than both cis men and cis women ( $p < .05$ ) for healthcare coverage. Black only (12.3%), Multi-racial, Non-Hispanic (14%), and Hispanic (13.3%) racial/ethnic groups had the greatest proportion of uninsured and were statistically different than Non-Hispanic Whites in their association with healthcare coverage ( $p < 0.05$ ).

Those with high school and some college but no degree were significantly different than those with four-year college degrees or higher for healthcare coverage ( $p < 0.05$ ). In terms of household income, households who made less than \$60,000/year or less were three times more likely to be uninsured than households making greater than \$60,000/year (15.2% vs. 4.1%). Households who made greater than \$60,000/year were significantly differently than households who made less for healthcare coverage ( $p < 0.05$ ). Among those who were married or partnered, there was almost two times less chances of being uninsured than among those who were unpartnered (7.1% vs. 12.2%), with significant statistical differences in health coverage between both groups ( $p < 0.05$ ).



**Table 3: Chi-Square Test of Independence for Healthcare Coverage with Selected Categorical Variables**

Categorical Variables		Healthcare Coverage, % (N)		X <sup>2</sup> test (df)
		Yes	No	
				21.29 (4)*
<b>Gender Identity</b>	Cis Man	91 (1,504)a	9.0 (148)a	
	Cis Woman	92.5 (1,910)a	7.5 (154)a	
	Trans Man	90.6 (192)a, b	9.4 (20)a, b	
	Trans Woman	86.7 (208)b	13.3 (32)b	
	Other	87.3 (500)b	12.7 (73)b	
<b>Sexual Orientation</b>	Heterosexual	90.8 (237)	9.2 (24)	7.36 (4)
	Lesbian	92.4 (1114)	7.6 (92)	
	Gay	91.1 (1430)	8.9 (140)	
	Bisexual	90.9 (887)	9.1 (89)	
	Other	88.7 (646)	11.3 (82)	
<b>Race</b>	White Only	91.8 (3490)a	8.2 (313)a	22.90 (6)*
	Black Only	87.7 (263)b	12.3 (37)b	
	American Indian or Alaska Native	100 (20)a, b	0a, b	
	Asian and Pacific Islander Only	94.6 (53)a, b	5.4 (3)a, b	
	Multi-racial, Non-Hispanic	86 (147)b	14.0 (24)b	
	Other Non-Hispanic	91.4 (32)a, b	8.6 (3)a, b	
	Hispanic	86.7 (299)b	13.3 (46)b	
<b>Education</b>	High School or Some College	85.9 (1,361)b	14.1 (223)b	74.35 (1)**
	4 Year Degree or higher	93.5 (2,948)a	6.5 (204)a	
<b>Household Income Brackets</b>	Below \$60K/year	84.8 (962)b	15.2 (173)b	106.3 (1)**
	Greater than 60K/year	95.9 (1,592)a	4.1 (68)a	
<b>Partnership Status</b>	Not Married	87.8 (1,518)b	12.2 (210)b	33.74 (1)**
	Partnered	92.9 (2,694)a	7.1 (206)a	
<b>Employment Status</b>	Working Full-time	94.6 (2,543)a	5.4 (146)a	97.22 (1)**
	Not working full-time	86.2 (1,680)b	13.8 (1,949)b	
<b>Disability</b>	Yes	87.1 (1,204)b	12.9 (179)b	33.95 (1)**
	No	92.6 (3,020)a	7.4 (242)a	
<b>HIV Status</b>	Positive	94.0 (172)a	6.0 (11)a	13.52 (2)*
	Negative	91.4 (3,584)a	8.6 (336)a	
	Unknown	87.2 (524)b	12.8 (77)b	
<b>Discrimination in the Past Year</b>	Yes	88.5 (1,392)b	11.5 (182)b	22.365 (1)**
	No	92.8 (2,353)a	7.2 (183)a	
<b>Perceived Barriers to Care</b>	Yes, experienced	92.2 (2,783)b	7.8 (235)b	13.71 (1)**
	No, haven't experienced	88.8 (1,282)a	11.2 (161)a	
<b>Quantitative Variables</b>				

	<b>Health Coverage Mean (n)</b>	<b>t-test (df)</b>		
<b>Age</b>	Yes: 39.32 (4,314) No: 35.94 (427)	-4.54 (4739)**		
<b>Psychological Distress</b>	Yes: 8.06 (4,214) No: 10.76 (423)	9.310 (4635)**		

\*p<0.001

\*\*p<0.0001

Note: Subscripts a-b denotes subset categories whose column level proportions significantly differ at the  $p < .05$

Those who indicated that they do not work full-time had almost three times greater proportion of being uninsured than those who work full-time (13.8% vs. 5.4%). Those who had a full-time job were significantly different in healthcare coverage than those who did not work full-time ( $p < 0.05$ ). 12.9% of those with a disability lacked health coverage while only 7.4% of those without a disability were uninsured, with significant difference between groups for healthcare coverage ( $p < 0.05$ ). For HIV status, those who reported not knowing their HIV status were more likely to not have health coverage (12.8%) than those who knew they were either positive (6%) or negative (8.6%) and were significantly different than both groups ( $p < 0.05$ ).

11.5% of those who experienced discrimination in the past year were uninsured and statistically different than those who did not experienced recent discrimination for healthcare coverage ( $p < 0.05$ ). Those who have health insurance reported greater perceived barriers to care those without coverage (11.2% vs. 7.8%). There were statistically significant differences among those who perceived barriers to care and those who did not for healthcare coverage ( $p < 0.05$ ). Those who are younger had greater likelihood in not having health coverage in a directionally negative relationship with age and healthcare coverage, while those without health coverage had higher average levels of psychological distress than those with coverage (10.76 vs. 8.06).

### **4.3 One-Way ANOVA Test of Association with Psychological Distress**

The results from the One-Way ANOVA can be found in Table 4. From the One-Way ANOVA test of association with Bonferroni post hoc test correction, healthcare coverage ( $p < 0.0001$ ), perceived barriers to care ( $p < 0.0001$ ), gender identity ( $p < 0.0001$ ), sexual orientation ( $p < 0.0001$ ), race/ethnicity ( $p < 0.0001$ ), education ( $p < 0.0001$ ), household income ( $p < 0.0001$ ), partnership status ( $p < 0.0001$ ), employment status ( $p < 0.0001$ ), disability status ( $p < 0.0001$ ), HIV status ( $p < 0.0001$ ), and experiencing discrimination in the past year ( $p < 0.0001$ ) were all statistically significant in their relationship with psychological distress. In the one-way T-test, age ( $p < 0.0001$ ) was also statistically significant with psychological distress.

Among the socio-categorical variables, there are notable differences in groups means. For gender identity, cis men had an average psychological distress score of 6.9 [95% CI (6.64, 7.17)] while trans men, trans women and other genders had a mean distress score of 10.52 [95% CI (9.75, 11.29)], 10.38 [95% CI (9.58, 11.17)], and 11.41 [95% CI (10.97, 11.85)] respectively. For sexual orientation, other and bisexual groups had a higher mean physiological distress at 10.91 [95% CI (10.50, 11.31)] and 10.15 [95% CI (9.80, 10.50)] than those who identify as heterosexual [7.18 (95% CI: 6.52, 7.84)], lesbian [7.13 (95% CI: 6.82, 7.44)], and gay [7.03 (95% CI: 6.75, 7.30)]. Among racial/ethnic groups, interestingly Black Only individuals had the lowest mean psychological distress score [7.34 (95% CI: 6.63, 8.05)] while Multi-Racial and Hispanic groups had the highest mean score at [10.01 (95% CI: 9.12, 10.90)] and [9.39 (95% CI: 8.71, 10.07)] respectively.

**Table 4:** One-Way ANOVA Results in the Association with Psychological Distress and Categorical Variables with Bonferroni Correction

Categorical Variables	Group Means (95% CI)	F value (df)
<b>Gender</b>		88.15 (4)*
Cis Man	6.9 (6.64, 7.17)	
Cis Woman	8.08 (7.84, 8.32)	

Trans Man	10.52 (9.75, 11.29)	
Trans Woman	10.38 (9.58, 11.17)	
Other	11.41 (10.97, 11.85)	
<b>Sexual Orientation</b>		104.08 (4)*
Heterosexual	7.18 (6.52, 7.84)	
Lesbian	7.13 (6.82, 7.44)	
Gay	7.03 (6.75, 7.30)	
Bisexual	10.15 (9.80, 10.50)	
Other	10.91 (10.50, 11.31)	
<b>Race/Ethnicity</b>		6.20 (6)*
White Only	8.20 (8.02, 8.38)	
Black Only	7.34 (6.63, 8.05)	
American Indian or Alaskan Native	8.60 (5.49, 11.71)	
Asian or Pacific Islander Only	8.89 (7.53, 10.25)	
Multi-Racial, Non-Hispanic	10.01 (9.12, 10.90)	
Other Non-Hispanic	8.24 (6.42, 10.06)	
Hispanic	9.39 (8.71, 10.07)	
<b>Education</b>		197.01 (1)*
High School or Some College	9.94 (9.64, 10.25)	
4 Year Degree or greater	7.49 (7.30, 7.68)	
<b>Household Income Brackets</b>		266.02 (1)*
Below \$60K/year	10.24 (9.90, 10.57)	
Greater than \$60K/year	6.80 (6.54, 7.05)	
<b>Partnership Status</b>		109.43 (1)*
Not Married	9.40 (9.12, 9.68)	
Partnered	7.58 (7.38, 7.78)	
<b>Employment Status</b>		139.4 (1)*
Working Full-time	7.41 (7.21, 7.61)	
Not working not full-time	9.40 (9.12, 9.67)	
<b>Health Care Coverage</b>		86.68 (1)*
Yes, has health care coverage	8.06 (7.89, 8.23)	
No, doesn't have healthcare coverage	10.76 (10.16, 11.35)	
<b>Disability Status</b>		1082.01 (1)*
Yes, has a disability	12.15 (11.84, 12.45)	
No, doesn't have a disability	6.69 (6.52, 6.85)	
<b>HIV Status</b>		22.34 (2)*

Positive	6.99 (6.19, 7.80)	
Negative	8.16 (7.98, 8.34)	
Unknown	9.64 (9.17, 10.12)	
<b>Discrimination in the Past Year</b>		292.84 (1)*
Yes	10.25 (9.96, 10.54)	
No	7.20 (6.98, 7.41)	
<b>Perceived Barriers to Care</b>		388.83 (1)*
Yes, Experienced	10.67 (10.38, 10.96)	
No, haven't Experienced	7.17 (6.98, 7.37)	
<b>Quantitative Variables (T-tests)</b>		
<b>Age</b>		98.74 (4649)*

\*p<0.0001; CI=confidence interval

For healthcare coverage, those who had coverage had a mean distress score of 8.06 [95% CI (7.89, 8.23)] compared to a mean score of 10.76 [95% CI (10.16, 11.35)] for those that are uninsured. Similarly, those who indicated having perceived barriers to care had a mean distress score of 10.25 [95% CI (9.96, 10.54)] while those without perceived barriers had a mean score of 7.17 [95% CI (6.98, 7.37)]. Those who have a disability had a distress score mean of almost more than twice than compared to those without a disability at [12.15 (CI 95%: 11.84, 12.45)] vs. [6.69 (95% CI: 6.52, 6.85)]. The mean distress score for those with a high school, GED or less and some college education levels [9.94 (95% CI: 9.64, 10.25)] was significantly different than the mean distress score for those holding 4-year college degrees and higher [7.49 (95% 7.30, 7.68)]. Among household incomes, earners with household incomes less than \$60,000/year had significantly different mean distress scores [10.24 (95% CI: 9.90, 10.57)] than among households with incomes greater than \$60,000/year [6.80 (95% CI: 6.54, 7.05)]. Those who were married or partnered had a lower mean distress score [7.58 (95% CI: 7.38, 7.78)] than those who were unpartnered [9.40 (95% CI: 9.12, 9.68)]. Those who indicated not having a full-time job had a significantly different mean distress score of 9.40 [95% CI (9.12, 9.67)] compared to those that work full-time [7.41 (95% CI: 7.21, 7.61)].

#### 4.4 Multiple Linear Regression Models

Four different linear regression models were computed to assess the effects different levels of predictor variable had in changing the linear relationship between the health interest variables and psychological distress. These four models and results are displayed in Table 5 below. Block 1 only includes the health interest variables; Block 2 adds in the primary socio-demographic variables; Block 3 adds the broader socio-demographic variables; and Block 4 includes interaction terms. Each model was checked in its meeting of linear regression assumptions of normality, equal variances linearity and independence, which all models have met except for the first block, which was more skewed to the right in normality and its residuals, which is expected as a simple model with two variables. In the blocks 2-4, this right skew in normality and the residuals is more modulated but still present to a small degree.

**Table 5:** Multiple Linear Regression Model Results with Psychological Distress as the Outcome Variable

Predictor Variables	N=4,388 Block 1, $\beta$ (s.e.)	N=4,377 Block 2, $\beta$ (s.e.)	N=3,697 Block 3, $\beta$ (s.e.)	N=3,697 Block 4, $\beta$ (s.e.)
<i>Health Indicators</i>				
Healthcare Coverage	2.27 (.28)****	2.07 (.27)****	1.06 (.26)****	1.33 (0.33)****
Perceived Barriers to Care	-3.4 (.17)****	-2.52 (.18)****	-1.34 (.17)****	-1.25 (.21)****
<i>Primary Socio-Demographics</i>				
Cis woman		1.11 (.33)***	0.51 (.32)	0.52 (.32)
Trans man		1.73 (.45)****	0.34 (.45)	0.40 (.53)
Trans woman		2.12 (.46)****	1.34 (.44)**	1.44 (.55)**
Gender diverse		2.5 (.36)****	0.95 (.35)**	1.05 (.43)*
Lesbian		-1.03 (.36)**	-0.52 (.34)	-0.53 (.34)
Bisexual		1.86 (.33)****	0.93 (.31)**	0.93 (.31)**
Other		1.60 (.36)****	0.62 (.34)	0.60 (.34)
Straight		-0.94 (.44)*	-1.40 (.62)*	-1.42 (.62)*
BIPOC		0.33 (.22)	-0.35 (.21)	0.12 (.38)
<i>Broader Socio-Demographics</i>				
Education Level			0.44 (.17)**	0.44 (.17)*

Household Income			-0.56 (.18)**	-0.57 (.18)**
Employment Status			0.48 (.16)**	0.48 (.16)**
Partnership Status			1.07 (.16)****	1.07 (.16)****
Disability Status			4.14 (.17)****	4.12 (.17)****
HIV Status			0.24 (.20)	0.23 (.20)
Discrimination in the past year			1.11 (.16)****	1.13 (.16)****
Age			-0.10 (0.006)****	-0.10 (0.006)****
<i>Interaction Terms</i>				
TGD X Coverage				-0.92 (.58)
TGD X Perceived Barriers				0.05 (.38)
BIPOC X Coverage				-0.03 (.67)
BIPOC X Perceived Barriers				-0.70 (.44)
Adjusted R <sup>2</sup>	0.094	0.161	0.39	0.39
F-value	228.33****	77.27****	124.1****	102.74****

\*p < .05. \*\*p < .01. \*\*\*p < .001 \*\*\*\*p<0.0001; TGD=Trans and Gender Diverse; N=Number; β=Beta; s.e.=standard error

Within the first block of variables, only 9.4% of the variance in psychological distress is accounted for in the model, with both health coverage and perceived barriers to care as significant predictors of psychological distress ( $p < 0.0001$ ). Those without health coverage had 2.27 higher scale points for psychological distress than those who had coverage, and those who have no perceived barriers to care had 3.4 lower points of psychological distress than those who did. When accounting for the primary socio-demographic variables in Block 2, health coverage and perceived barriers to care retained its significance at  $p < 0.0001$ , though its effect on psychological distress reduced slightly, moving from 2.27 to 2.07 points higher for psychological distress for those uninsured and to 2.52 points lower on the psychological distress scale among those who have indicated no perceived barriers to care.

Also in Block 2, cis women ( $p < 0.001$ ), trans men ( $p < 0.0001$ ), trans women ( $p < 0.0001$ ), and gender diverse ( $p < 0.0001$ ) were significant in their association with psychological distress when compared to cis men and controlling for other variables in the model. Cis women had 1.1, trans men 1.73, trans women 2.12, and gender diverse 2.5 points higher points on the psychological distress scale compared to cis men. For sexual orientation, lesbians ( $p < 0.01$ ), bisexual ( $p < 0.0001$ ), other ( $p < 0.0001$ ), and straight individuals ( $p < 0.05$ ) were significantly different in psychological distress compared to those who identify as gay. Lesbians and straight individuals had 1.01 and 0.94 points lower psychological distress respectively compared to those who identify as gay, while bisexuals had 1.86 points higher and other 1.60 points greater psychological distress than those who are gay. Overall, Block 2 accounts for 16% of the total variance in psychological distress.

When the broader socio-demographic variables were added into the model in Block 3, some of the variables in Block 2 lost their statistical significance, apart from healthcare coverage ( $p < 0.0001$ ), perceived barriers to care ( $p < 0.0001$ ), trans women ( $p < 0.01$ ), gender diverse ( $p < 0.01$ ), bisexual ( $p < 0.01$ ), and straight ( $p < 0.05$ ). The effect of perceived barriers to care on psychological distress was decreased from Block 2, with those who had not experienced perceived barriers to care having 1.34 lower points of psychological distress than those who had. Similarly, for healthcare coverage, the overall effect on psychological distress reduced from Block 2 with uninsured individuals having 1.06 points greater psychological distress than those who were insured. Trans women and gender diverse individuals, after controlling for all socio-demographic variables, had 1.34 points and 0.95 greater psychological distress than cis men respectively. Bisexuals had 0.93 points higher on the psychological distress scale while straights had 1.40 points lower psychological distress compared to those who identify as gay.



For the broader socio-demographic variables in Block 3, educational level ( $p < 0.01$ ); household income ( $p < 0.01$ ); employment status ( $p < 0.01$ ); partnership status ( $p < 0.0001$ ); disability status ( $p < 0.0001$ ); experiencing discrimination in the past year ( $p < 0.0001$ ); and age ( $p < 0.0001$ ) were significant predictors for psychological distress in Block 3. Compared to those with a four-year college degree or higher, those with high school or some college had 0.44 points higher on the psychological distress scale. Households who made \$59,999/year or less had 0.56 points lower of psychological distress than households who made \$60,000 or greater a year. Those who do not work full-time had 0.48 points higher of psychological distress than those who work full-time. Compared all others who were not single, those who were unpartnered had 1.07 greater points of psychological distress. Individuals with a disability had 4.14 points greater on the psychological distress scale than those who did not. Those who had experienced discrimination in the past year related to their sexual orientation or gender had 1.11 points higher psychological distress than those who did not. With each increase in age, one can expect to have 0.10 points lower psychological distress. Block 3 accounted for 39.0% of the estimated variance in psychological distress and was significant in its prediction of the linear relationship between the variables and psychological distress ( $p < 0.0001$ ).

The full model with the inclusion of interaction terms, Block 4, accounted for 39.0% of the variance of psychological distress. In this model, all variables that were significant in Block 3 retain significance at the same level, while none of the new interaction terms introduced display any significance to psychological distress. Among those who did not have perceived barriers to care, there was a 1.25-point reduction on the psychological distress scale compared to those who did. Additionally, there was a 1.33-point increase for those who are uninsured compared to those insured in Block 4. Compared to cis men, trans women and gender diverse individuals had 1.44

and 1.05 points higher psychological distress, respectively. Bisexuals had 0.93 greater psychological distress while straights had 1.42 points lower distress than those who identify as gay.

For the broader socio-demographic variables, those with high school or some college had 0.44 points higher of psychological distress than those with a 4-year degree or higher. Compared to those who work full-time, those who do not have full-time jobs had 0.48 points higher psychological distress. Similarly, those with household incomes less than \$60,000/year had 0.57 points lower psychological distress than households with higher incomes. Compared to all others who were not single, those who were unpartnered had 1.07 points higher psychological distress. Those with a disability had 4.12 points higher psychological distress than those who do not have a disability. Those that have experienced discrimination in the past year had 1.13 points greater psychological distress than those who did not. 0.10 lower points of psychological distress with unit increase of age was seen again in Block 4 as in Block 3.

## Chapter 5: Discussion and Conclusions

### 5.1 Analysis

In terms of research question #1, the One-Way ANOVA provided insight on the associations between the health indicator and socio-categorical variables with psychological distress and mean differences between groups to help answer this question. Research question #2 was answered by exploring the variables associated with healthcare coverage and significant group differences in the chi-square test. Meanwhile, research question #3 was primarily answered from the multiple linear regression models. Each section below will dive in further for the analyses from each type of test in relation to the above research questions and draw conclusions from the data.

#### 5.1.2 Health Indicator Variables

In the One-Way ANOVA, healthcare coverage and perceived barriers to care were significantly associated with psychological distress. Those who were uninsured and/or experienced perceived barriers to care had higher levels of psychological distress, which has been found in previous research (Finkelstein et al., 2011; McWilliams, 2009; Garfield et al., 2019). Although it can be challenging to access healthcare services even with insurance, individuals without coverage will be even less likely to seek out and obtain needed healthcare services and care due to cost and access barriers (McWilliams, 2009; Garfield et al., 2019). Mental health care without coverage can be especially cost prohibitive and inaccessible to many out-of-pocket without health insurance and/or among those who live in areas with limited sliding scale resources, such as more suburban or rural regions (Barefoot et al., 2015). Individuals who have had a negative experience in accessing and/or receiving healthcare additionally are less likely to pursue necessary healthcare services and treatments, especially on a regular basis (such

as behavioral health therapy), potentially contributing to higher poorer mental health outcomes and psychological distress (Lee et al., 2009; Rivenbark & Ichou, 2020).

Perceived barriers to care were significantly associated with healthcare coverage with significant differences between those who do and do not have healthcare coverage in the chi-square test. Those who did not have perceived barriers to care in accessing or while receiving healthcare were more likely to not have healthcare coverage than those who have coverage. This finding may be related to the relationship between having healthcare coverage and using and accessing health services. Due to cost and other barriers, uninsured individuals are less likely to seek out and obtain healthcare services, as consistent with the literature, and because of less contact with healthcare systems, it makes sense that they will experience less overall perceived barriers to care (McWilliams, 2009; Garfield et al., 2019; James et al., 2016; Kates et al., 2018).

In the linear regression, perceived barriers to care remained significant even after all socio-demographic variables were controlled, while health care coverage lost significance. Those who experience less or no perceived barriers to care have better mental health outcomes compared to those who do not, despite identity and socio-economic status. Individuals with more negative health care experiences and barriers to care may not get the care they need and thus have higher psychological distress. This finding is consistent with the literature in the correlation of poorer mental health outcomes with perceived barriers to care (Barefoot et al., 2015; Mays et al., 2017; Kcomt et al., 2020).

### **5.1.2 Primary Socio-demographic Variables**

#### **Gender Identity:**

For gender identity in the One-Way ANOVA, it is clear that the transgender and gender diverse groups had higher mean scores of psychological distress than the cisgender groups,

leading to a significant association between gender identity and psychological distress. This finding is supported in the literature through studies that have found disproportionate poorer mental health outcomes among transgender individuals compared to LGB+ cisgender individuals (Su et al., 2016; James et al., 2016; Fredriksen-Goldsen et al., 2014). The gender diverse group out of all the groups had the highest average score of psychological distress, signifying a mental health disparity within the transgender and gender diverse umbrella. Transgender and gender diverse disproportionately experience higher levels of discrimination than other groups in the LGBTQ+ community, which may explain some of the strength of this association with psychological distress (Su et al., 2016; James et al., 2016; Kcomt et al., 2020).

In the linear regression, however, it was found out of all the gender groups, trans women and gender diverse individuals were the only groups that remained significant with psychological distress after controlling for all variables, with cis men as the reference group. This finding is notable as compared to the other groups, trans women specifically had the highest frequency of Whites (82.83%) in the sample by gender. Although this gender group were the most privileged in terms of race, they also had higher unemployment (8.36%) than the other groups and higher poverty, with one-fifth (20%) of trans women in households that made less than \$20,000/year. Evidently, despite race and socio-economic status, both trans women and gender diverse individuals face greater challenges to overall social acceptance for their identity as well as hardships during and for transition, due to cost barriers to obtaining care. In relation to the Minority Stress Model, it makes sense that trans women and gender diverse individuals, as lesser privileged gender groups with additional societal and/or medical barriers, have greater psychological distress (Meyer, 2003).

In the Chi-square test, gender identity was significantly associated with healthcare coverage, where transgender and gender diverse recipients had higher proportions of uninsured compared to cisgender groups. Statistically, however, cis men and cis women were only significantly different than trans women and gender diverse individuals for healthcare coverage. This finding indicates a healthcare coverage disparity between certain TGD groups and cisgender individuals, which could be related to the disproportionate employment and income disparities found for transgender populations (James et al., 2016).

**Sexual Orientation:**

Similar to gender identity, those who identify out of the traditional binary categories of sexual orientation, particularly those who are bisexual or other/queer, had higher mean scores of psychological distress than lesbians, gays, and heterosexuals in the sample in the One-Way ANOVA. The results of the linear regression also demonstrate the significant association both groups have with psychological distress. Bisexuals were significantly associated with having greater psychological distress, even after controlling for all other socio-demographic variables, in comparison to gay men. Bisexuals are subject to greater societal critique and oppression than other sexual orientation groups, as they have been less represented and understood by media and both inside and outside LGBTQ+ circles. They fall both outside the norms of hetero- and homonormativity and thus face greater poorer mental health outcomes linked to poverty and discrimination, which is consistent with the literature and supported by the findings from this study (Ross et al., 2010; Ross et al., 2016).

**Race:**

For race/ethnicity, those who were Black only had the lowest group mean score for psychological distress in the One-Way ANOVA. Although Blacks in U.S. society heavily face

greater discrimination and violence, this marginalized group tends to have high levels of social and community support that mitigate the negative effects of social and psychological stress (Ajrouch et al., 2010). It is also possible that certain racial/ethnic groups are less likely to report higher psychological distress due to mental health stigmas, contributing to bias in the results. Hispanic and Multi-racial groups, however, had the highest mean scores for psychological distress. As this survey was launched after the start of the Trump administration, the uncertainty and fear among the Hispanic and Latinx community over administrative changes and rise of anti-immigration policies could have played a role in higher average psychological distress among these racial/ethnic groups in addition to minority stress.

Race/ethnicity was found to overall be significantly associated with healthcare coverage in the Chi-square test, with notable group differences in the Black Only, Multi-racial, and Hispanic racial/ethnic groups. Although psychological distress may be lower among Blacks, there are significant disparities in healthcare coverage between other racial/ethnic groups besides Hispanic and Multi-racial. These disparities may be related to socio-economic inequities due to institutional racism. For Hispanic individuals specifically, the requirement of citizenship for health coverage programs, such as the ACA, and fear of deportation among Hispanic individuals during a period of political uncertainty in 2017 are possible explanation for the health coverage disparity among other groups.

### **5.1.3 Broader Socio-demographic Variables**

#### **Socio-economic Status:**

There are other socio-demographic variables significantly associated with psychological distress that were found in the One-way ANOVA. Four related socio-economic variables, educational level, household income, employment status, and partnership status were

significantly associated with psychological distress. Those without college degrees and lower education are less likely to make a living wage and obtain stable, full-time employment that is supportive of positive mental health outcomes. Based on the demographic data by gender, trans men, trans women and gender diverse individuals overall were more likely to have \$20,000/year or less in household income, have a high school education or less, and be unemployed and/or work part-time than cisgender individuals in the sample. This conclusion is consistent with the literature on employment and related disparities between transgender individuals and other groups with higher levels of unemployment and poverty (James et al., 2016).

Related to socio-economic status, partnership status was associated with psychological distress, with single individuals having higher overall psychological distress than married or partnered individuals. Married or partnered individuals may have lower levels of psychological distress related to the socio-economic benefits marriage can offer in income, health insurance, housing, and stability among other benefits that are associated with mental health outcomes (Uecker, 2012). Healthy partnerships can also offer social support that single individuals may lack in source or stability (Ryan et al., 2014).

Likewise, all related socio-economic variables socio-demographic variables were significant predictors of psychological distress in the linear regressions. The better off one is, the less psychological distress they experience as stability and security, as necessary basic needs, are more guaranteed compared to those with lower socio-economic statuses. For instance, if one has a high school diploma and no college, they may find it difficult to obtain high-paying, full-time jobs and as a result, one may not be able to access healthcare, secure housing, or afford sufficient food. As supported in the literature and in this study, socio-economic variables are strong predictors for psychological distress.



The socio-economic status-related variables of educational level, household income, partnership status, and employment status were all significantly associated with healthcare coverage and with significant differences between insured and uninsured groups. Educational level is related to social mobility, income potential and job opportunities and given that for most Americans health coverage is tied to employment, these variables are evidently strongly associated with healthcare coverage. Household income level often relates to eligibility for the ACA Marketplace coverage plans as well as for Medicaid in expansive states, which has fixed minimum and maximum household income requirements.

Even with the ACA in place during 2017 LGBT Institute Southern Survey recruitment and data collection periods, 15.2% of households with incomes below \$60,000/year did not have coverage. These households may fall into the coverage gap of not meeting income minimum requirements but live in Medicaid non-expansion states so remain uninsured. Married individuals in the sample had almost one-half the rate of uninsured than single individuals due to having an option to add a spouse one's health plan as well as potentially from the economic benefits from marriage with additional combined incomes and avenues to obtain coverage.

**Disability Status:**

Disability status was significantly associated with psychological distress, in both the linear regression and ANOVA, with individuals who have a disability having almost twice greater average psychological distress than those who do not. Having a physical, emotional, or mental condition(s) that impair one's abilities and functions in carrying out daily life can have drastic effects across all aspects of life, from employment to education, and how one is treated and perceived in society. As a result, one's abilities can be a source a major distress as well as discrimination. Navigating gender and sexual orientation identities and achieve acceptance on

top of having a disability can be especially challenging and cause ostracization even within the LGBTQ+ communities due the additional layer of minority status, which contributes to higher psychological distress.

Disability status was significantly associated with healthcare coverage. Despite possible additional health needs, those with disabilities had higher rates of being uninsured than those without disabilities. With Medicaid non-expansive policies in most of the southern states, it is possible that individuals with disabilities face greater obstacles in securing healthcare coverage than those without disabilities, even with the ACA in place due to minimum income requirements as well as the addition of work requirements to Medicaid starting in 2018 in some states, such as Arkansas.

#### **HIV Status:**

In the ANOVA, those who had an unknown HIV status had higher levels of psychological distress than those who were HIV+ and HIV-. The reason for this finding could be that those of more marginalized backgrounds, such as in race/ethnicity or social class, are more likely to not answer or report they do not know their status compared to other groups. Additionally, those who report not knowing their HIV status may have less social and community supports and/or lower socio-economic status than those who have been tested for HIV and are aware of their status. When controlling for other variables in the linear regression, HIV status lost its association with psychological distress, probably due to its potential relationships with other variables stated above.

Additionally, those who reported that they did not know their HIV status had higher rates of those without coverage than HIV+ and HIV- respondents and were significantly different than insured and uninsured HIV+ and HIV- respondents in the chi-square test. Uninsured individuals

who reported an unknown HIV status may not have sought out HIV testing due to perceptions of cost, lack of resources on testing and linkage to free tests, and/or lower health literacy on navigating healthcare systems and the importance of knowing HIV status for population health prevention of HIV.

**Experiences of Discrimination:**

Having experienced discrimination in the past year was significantly associated with greater psychological distress in both the ANOVA and linear regressions. Through the literature, it is known that experiences of discrimination are strongly associated with poorer mental health outcomes, and that certain groups are more likely to experience discrimination than other groups (McLaughlin et al., 2010; James et al., 2016; Meyer, 2003). Transgender and gender diverse individuals and race/ethnic minorities disproportionately experience higher levels of discrimination than other groups in the LGBTQ+ community, of whom may be overrepresented in this association between discrimination and psychological distress (James et al., 2016). Age is associated with psychological distress, which is supported by previous findings on the indirect relationship between age and psychological distress (Jorm et al., 2005).

Those who have experienced discrimination in the past year had higher rates of uninsured than those who have not in the chi-square test. Among those that are uninsured, there is higher representation of sub-minority identities, such as trans and gender diverse individuals and BIPOC, which experience greater general discrimination than other groups. The same groups that are more likely to experience discrimination also tend to represent the uninsured at higher rates.

**Age:**

Age was found to be significantly associated with psychological distress in both the One-Way ANOVA and linear regressions. As one gets older, they experience lower psychological

distress, perhaps due to a mix of socio-economic status improvements and lower levels of discrimination older groups tend to experience, as consistent with the literature (Jorm et al., 2005).

Younger individuals are more likely to not have health coverage than those who are older. This data trend may be due to socio-economic conditions at younger ages, where health coverage is tightly related to income and/or employment, as well as pursuing marriage at later ages.

## **5.2 Public Health Implications**

From this study, it is clear that LGBTQ+ populations located in the South have unique health needs and that disparities between gender and sexual orientation groups within gender and sexual minorities exist. The rates of uninsured among trans women, gender diverse, Black, Multi-racial, and Hispanic groups surpassed the average national uninsured rate in 2017 by a margin of 3-5%, which is quite substantive. Neither ACA nor the equality in marriage rights seemed to have benefitted certain TGD and BIPOC groups as much as it did the general population. This finding is an important contribution to the literature in examining LGBTQ+ healthcare disparities in the South, where health policy efforts often face hindrances with a resultant coverage gap.

Bisexuals, trans women and gender diverse individuals are especially groups this research has found to have poorer mental health outcomes after controlling for socio-economic factors and discrimination. Across the TGD and BIPOC groups, there notable disparities perceived barriers to care, household income, rates of full-time employment, educational status, disability status, and experiences of discrimination compared to the cisgender and non-BIPOC groups.

Disability status was found as a strong predictor for psychological distress among LGBTQ+ Southerners, which is a major contribution to the literature that warrants further research. These differences in mental health and healthcare coverage should be considered in public health practice and policies to prioritize the needs of the most vulnerable groups and address LGBTQ+ health disparities in the South.

### **5.3 Recommendations:**

Health coverage and perceived barriers to care overall have associations with psychological distress with mental health disparities among transgender LGB+ and certain racial/ethnic minorities in the South. When exploring for solutions to bridge these disparities and the coverage gap, wider health policy solutions should be considered. Full Medicaid expansion in non-expansion states has the potential to drastically close the coverage gap and improve health outcomes. Likewise, eliminating work requirements for Medicaid, as well as other safety net programs, has the potential to increase health care coverage.

State-wide efforts to improve behavioral parity should also be considered to improve access to behavioral and mental health services and treatments as well as improving insurance coverage choices offered via the ACA, especially in more suburban and rural counties. It is important that marginalized groups more likely to be eligible for Medicaid or ACA Marketplace coverage find it accessible, affordable, and meet their healthcare needs through continued state efforts and compliance with ACA requirements. The Southern states' movements to undermine and compromise the ACA should be reconsidered and reevaluated. Additionally, funding for healthcare navigators, enrollment assistance, and marketing of the ACA should be once again refurbished, as these supportive programs are effective in increasing eligible enrollment and reaching hard-to-reach populations.

Beyond health policy recommendations, it is essential that healthcare providers are an active part of the solution to improving mental health disparities and reducing perceived barriers to care among the LGBTQ+ community. Healthcare providers should be encouraged to pursue continued educational credits and/or available certifications in cultural responsiveness, LGBTQ+ diversity, and on racial/ethnic bias. Healthcare systems should make institutional effort to shift away from a binary outlook and understanding of gender and sex, including in medical school education. Healthcare systems should also make active efforts to improve accessibility of their care and facilities (i.e., adding ramps, accessible bathrooms, etc.) to help address the disproportionate health burdens, both mental and physical, individuals with disabilities experience. Other institutions, such as schools, places of work, social services, among others should also implement these institutional changes to improve overall inclusivity and support of LGBTQ+ community members, which would decrease instances of societal oppression and discrimination that are linked to mental health and are more common among transgender and marginalized racial/ethnic groups.

#### **5.4 Limitations**

The 2017 LGBT Institute Southern Survey utilized a convenience sampling method for recruitment and data collection and thus it is likely that the sample contains some bias in the under-representation of sub-groups and cannot fully be used to generalize all LGBTQ+ southerners. In part because of convenience sampling and survey distribution through LGBTQ+ community-based organizations, the survey reached a White, wealthy, insured, and highly educated subset of the LGBTQ+ community in the South. For a research project focused on healthcare coverage and access, it is possible that these overly represented socio-demographics affected the results of the statistical tests and caused some patterns to be overlooked or not

determined due to lack of statistical power in the more under-represented groups, such as BIPOC and/or those with lower household incomes. The transgender and gender diverse groups also had lower representation in the survey as compared to cisgender participants, especially among trans men and trans women, which could have caused some bias in the comparison between gender groups due to the overrepresentation of cisgender individuals.

As a survey instrument, the data were also subject to response bias and respondent fatigue. Some questions concerning more sensitive nature, such as reporting income and psychological distress, could have been prone to response bias with individuals answering inaccurately or not honestly. This case is especially true in responding to the K6 psychological distress scale, as due to mental health stigma, participants may succumb to social-desirability bias in their responses and under-report psychological distress.

Additionally, respondent fatigue was apparent in the 2017 LGBT Institute Southern survey as questions more towards the end of the survey received less responses compared to the questions in the first half of the survey. The health, general discrimination, individual & household income sections were more towards the center and end of the survey, so it is possible that the variables derived from those sections, such as health care coverage and psychological distress, were subject to non-response bias, compared to the other variables used that have less missing. The mean imputation procedure performed for the household income variable in the linear regression models could have resulted in some bias. Although more individuals were added into the models, the mean imputation resulted in a larger amount of higher household incomes within the variable, which could have altered and/or negated its relationship with psychological distress.

## **5.5 Future Research Opportunities:**

More inclusive research is needed to further study mental health and disparities of LGBTQ+ communities and sub-groups, especially with adequate sample size to draw conclusions between gender and race/ethnic sub-groups. Some oversampling of gender and racial minority groups and utilization of recruitment and outreach tools to reach hard-to-reach populations may be beneficial for future studies to ensure research samples are nationally representative. Additionally, there may be value for survey-based studies to include a questionnaire on perceived barriers to care that are generalized and expand beyond healthcare-based discrimination, but also on issues such as cost, insurance, limited network of providers, etc. to better study which aspects of perceived barriers of care impact mental health or not. In studying mental health, coverage, and access among LGBTQ+ populations, future researchers may want to consider constructing a larger research study to compare the relationships between those variables in non-Medicaid expansive states vs. expanded states to further identify best policy recommendations. Additionally, to overcome the biases associated with cross-sectional survey designs, it may be beneficial for future studies to consider longitudinal and cohort study designs.



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